

# NETWORK WORLD

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## Bellcore to unveil SMDS mgmt. plan

By Bob Wallace  
Senior Editor

RED BANK, N.J. — Bell Communications Research this week is expected to release a blueprint outlining how users will manage Switched Multimegabit Data Services (SMDS) provided by the regional Bell holding companies.

The new Bellcore Technical Advisory (TA) defines how users will manage nodes on an SMDS network, including adding and deleting addresses, and access SMDS usage data on carrier switches for internal chargeback applications. Bellcore officials said availability of these on-line management functions is key to SMDS acceptance.

"These capabilities are high on the wish lists of users that the RBHCs have talked to about SMDS," said Dave Piscitello, one of the TA's authors and a member of Bellcore's technical staff here. "Without them, SMDS would be less attractive."

"Being able to manage the service and get usage data for chargebacks are musts," said Gene Kwiatney, a computer science professor at Temple University in Philadelphia. "You can't make a commitment to SMDS without them."

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Network World User Advisory Panel members Bud Huber (left) and Chuck Papageorgiou discuss net concerns in roundtable. See page 17.

## AT&T breaks new ground with contract service deals

By Anita Taff  
Washington Bureau Chief

WASHINGTON, D.C. — Five months after getting the green light from the FCC to offer network services on a contract basis instead of using published tariffs, AT&T last week filed its first two contract deals.

The contracts mark the first time a dominant regulated carrier has been allowed to negotiate discounted prices for generally available services without having to prove that special circumstances apply.

AT&T's Tariff 12s, for example, are custom deals that are

available only to users that purchase an integrated set of network services. Tariff 15 deals allow AT&T to offer discounts on regular AT&T services but only in response to similar customer offers from rivals.

The contracts filed last week offer straight discounts off regular AT&T services. The deals will test just how much marketing flexibility AT&T has and, possibly, the legality of the new service format.

The Federal Communications Commission voted to give AT&T the flexibility to offer services  
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## NETLINE



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## IBM shares vision for distributed LANs

Airs plan for supporting distributed applications across LAN Server networks and other platforms.

By Caryn Gillooly  
Senior Editor

BOSTON — IBM last week fleshed out a two-pronged plan to transform its LAN Server network operating system into what it called an "open distributed system" based on the Open Software Foundation, Inc.'s (OSF) Distributed Computing Environment (DCE) and other technologies.

The plan, aired at NetWorld 92 Boston, will ultimately enable LAN Server to support distributed applications running across different local-area networks — such as Novell, Inc.'s NetWare — and on larger systems, such as IBM mainframes.

Although IBM promised no timetable for delivery of the new LAN Server software, analysts said the move is the boldest step yet by a network operating system provider to offer an open distributed computing environment.

During a presentation here, IBM said the main benefits of the LAN Server makeover would include access through a common graphical user interface to all distributed net resources via industry-standard application program interfaces (API); interoperability with existing LAN systems;

and extensive facilities to manage a heterogeneous net of client workstations and servers, either centrally or from any workstation on the network.



IBM executive Art Olbert speaks at NetWorld 92 Boston show.

"Provision of an open distributed infrastructure is, of course, a formidable challenge, but it is the solution that IBM believes our customers want and need," IBM said in a document last week.

"This [new version of LAN

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## FEATURE



## Crafting a net outsourcing strategy

By Mary Johnston Turner  
and Lucie Juneau  
Special to Network World

By all accounts, outsourcing's popularity continues to increase. More and more executives are opting to outsource data processing and network operations to gain cost advantages, improve service to end users and free existing staff to focus on core business issues.

The figures tell the story. In 1991, revenue from outsourcing services totaled \$33 billion, according to estimates from The Yankee Group, a Boston-based market research firm. By 1994, revenues from outsourcing of all types of systems and

facilities management as well as network services will top \$49 billion annually.

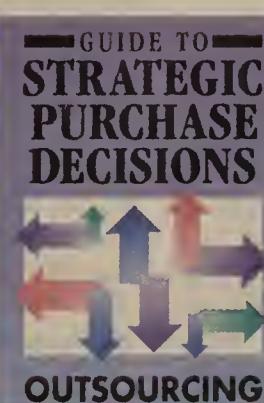
Handing over responsibility for data center operations has long been the staple of outsourcing. But a growing number of users are looking for outsourcing vendors that can assume responsibility for operating and managing networks as part of an outsourcing contract.

Network outsourcing represents less than 10% of today's

outsourcing deals. But its popularity is expected to increase as managers strive to avoid large capital outlays during tight economic times.

Once the strategic decision to outsource has been made, network executives face the challenge of teaming up with the most appropriate outsourcing provider.

This inaugural Guide to Strategic Purchase Decisions will examine the factors users must



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# NetFRAME preps powerful new superserver for debut

NF500, based on 50-MHz 80486 microprocessor, boasts increased memory, redundancy features.

By Bob Brown  
and Joanne Cummings  
Network World Staff

MILPITAS, Calif. — NetFRAME Systems, Inc. this week is expected to unveil its latest superserver, which offers increased fault-tolerance, a major boost in processing power and supports new application processing cards that let users process a mix of applications on a single server at one time.

The company's NF500 server is based on an Intel Corp. 80486 50-MHz microprocessor, which provides twice the power of the 80486 25-MHz chip on which the firm's NF400 server is based. The new superserver also offers in-

creased fault tolerance and memory.

Executives from Intel, Novell, Inc., Oracle Corp., SunSoft, Inc. and Unix System Laboratories are scheduled to participate at an NF500 press briefing tomorrow at NetFRAME headquarters here.

The NF500, like the NF400, is a floor-standing model that can support as many as eight cards designed to handle either I/O or application processing tasks. Although I/O cards are available for the NF400, NetFRAME has not shipped them yet. The cards are expected to be based on an 80486 25-MHz architecture.

The new NF500 application  
(continued on page 7)

# French, German carriers to buy into BT's Syncordia

France Telecom also seeks Westinghouse unit.

By Barton Crockett  
Senior Editor

PARIS — Officials of France Telecom last week revealed that the carrier plans to team with Germany's Deutsche Bundespost (DBP) Telekom to acquire 40% of British Telecommunications PLC's (BT) Atlanta-based Syncordia Corp., a global network outsourcing company.

Company officials said the two carriers expect to finalize the deal this month.

In a separate action, France Telecom is discussing the acquisition of Westinghouse Communications from Westinghouse Electric Corp., a move that would give the French firm a U.S.-based car-

rier operation.

If the Syncordia deal goes through, it will be the first significant move by the French and German carriers into the global network outsourcing business. Both provide facilities management and international private-line services to domestic users, but neither provides those services outside their home countries.

"We want to be positioned in [the global net outsourcing] business if it takes off," said a France Telecom official who requested anonymity.

Another France Telecom executive said the carrier will spend about \$50 million for its 20% of  
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# Internet standard to allow multimedia mail exchange

By Wayne Eckerson  
Senior Editor

The Internet Activities Board (IAB) is expected to soon approve a draft standard that would enable Internet users to exchange messages containing audio, image, video and non-ASCII text, among other things.

The Multipurpose Internet Mail Extensions (MIME), submitted last month to the IAB, would greatly enrich the functionality of Internet mail and make it harder for X.400 to win a big following on the Internet.

"MIME represents yet another nail in the coffin of X.400," said

Marshall Rose, a principal at Dover Beach Consulting, Inc. in Mountain View, Calif.

The 1988 version of X.400 supports multimedia messaging, but products based on the standard will not be available until the end of the year at the earliest. Most products today conform to the 1984 version of X.400, which offers limited support for multimedia messaging.

The shortcomings of X.400 give MIME plenty of opportunity to become the standard of choice for exchanging multimedia mail across the Internet, Rose said.

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# Briefs

## SNMP support coming for AS/400.

IBM this week is expected to announce new models of its Application System/400 minicomputers. It will also unveil software enhancements that beef up AS/400 net management, including a new capability that enables the AS/400 to communicate directly with any Simple Network Management Protocol-based management system, according to sources familiar with the announcement. Today, the machine can communicate using SNMP only with IBM's host-based NetView management system.

IBM is also expected to announce incremental enhancements that will make the AS/400 easier to configure when using IBM's Advanced Peer-to-Peer Networking (APPN). Currently, any device that will communicate with the AS/400 has to be described in advance so the AS/400 knows, for example, what character stream to employ. The company will add default values that allow local-area network-attached devices to dial in to an AS/400 via APPN and be automatically configured.

**CEO offers Notes-worthy insights.** In a briefing last week with editors from International Data Group, which publishes *Network World*, Jim Manzi, Lotus Development Corp.'s chief executive officer, offered insights into the future of its Notes groupware product. He said Lotus is examining ways to support videoconferencing capabilities in Notes and fine-tune the product's database replication features.

In addition, the company is looking to add work flow automation capabilities to Notes, such as those offered by Reach Software Corp. in its WorkMAN product, and fully integrate the messaging systems of Notes and its cc:Mail (see "Lotus details its plans for integrating cc:Mail, Notes," page 4).

Manzi said Lotus has even toyed with the idea of establishing "server bureaus" that would enable users to set up Notes networks on servers administered by a third party. What's more, Notes will serve as the foundation for a new generation of networked applications, including what he called a group-enabled spreadsheet already in the works at the company.

Lotus is only now beginning to see some profit from Notes, which was introduced in 1989 after several years of development work, Manzi said. Also,

he dismissed the threat of emerging competition in the groupware market, saying it will take rivals, such as Microsoft Corp. and Borland International, Inc., years to match Notes' capabilities.

## Pan-European, X.25 service slated.

At the World Communications Seminar last week in Paris, Edward Astle, Cable & Wireless PLC's regional director for Europe, said the carrier plans to introduce within a few months the first pan-European public X.25 packet to run at speeds up to 2M bit/sec. The service will be available in major European cities and will be linked with public data network services from carriers that Cable & Wireless owns in Hong Kong, the U.K. and the U.S. Cable & Wireless does not have any customers using the European X.25 service, although some academic and research institutions have agreed to be beta customers.

**ARDISNET comes on-line.** ARDIS Co., the wireless radio network company owned by IBM and Motorola, Inc., last week announced it has cut over a new terrestrial backbone to link the 1,250 base stations supporting its radio net in the largest 400 U.S. metropolitan areas.

The new backbone, dubbed ARDISNET, was built and will operate under a five-year, \$70 million agreement with AT&T and IBM for equipment as well as leased-line and net management services. ARDIS consolidated its 32 regional radio network controllers into six AT&T central offices, which are linked via T-1 lines — a configuration that is expected to improve network reliability and rerouting capabilities. ARDISNET also increases the number of ARDIS access points from three to more than 100 by allowing access from various AT&T central offices. Today, users link their hosts to ARDIS via leased lines to one of three ARDIS data centers.

## Novell, 3Com shake hands over deal.

One-time rivals Novell, Inc. and 3Com Corp. last week outlined a strategic marketing alliance designed to help their mutual users and resellers better integrate the two companies' products. The agreement includes new software tools to enable 3Com's 3+Share users migrate to Novell's NetWare 3.11. The tools will be available to resellers and users from Novell in the second quarter.

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# Lotus details its plans for integrating cc:Mail, Notes

Enhancements to simplify combined product use.

By Bob Brown  
Senior Editor

BOSTON — Lotus Development Corp. last week detailed plans at NetWorld 92 Boston to integrate its Notes groupware with its local-area network-based cc:Mail electronic mail.

The integration is designed to simplify the management and use of cc:Mail and Notes for users that have or plan to implement both products. It will also make it easier for Lotus to sell Notes into the large base of cc:Mail users.

Lotus, which acquired cc:Mail in 1991, reaps between 5% and 10% of its total revenue from its cc:Mail and Notes products, according to analysts. Currently, the products are linked via a gateway — introduced by Lotus about two years ago — that runs on a Notes server.

The first step in the product integration involves migration of cc:Mail's Import/Export Server software from DOS to OS/2, said Eric Sall, director of Notes product management.

The Import/Export Server provides the link between cc:Mail message stores and the cc:Mail/Notes gateway. It currently runs on a stand-alone DOS machine

but will be upgraded to run on the OS/2 computer supporting Notes and the cc:Mail/Notes gateway.

This will simplify mail setup and administration as well as obviate the need for the stand-alone DOS computer, Sall said.

Other enhancements include automatic directory synchronization, which allows any new entries into a cc:Mail directory to be automatically recorded in a user's Notes directory, and vice-versa, according to Shelley Harrison, director of marketing for Lotus' cc:Mail division. Currently, users must add new entries to directories on both cc:Mail and Notes.

Another upgrade is a two-way mailbox conversion that will let users save existing stored messages when converting from cc:Mail to Notes, and vice versa. All these improvements are due out during the next five months.

The next step in the integration involves the rollout of Notes Version 3.0, expected to be released by year end. Sall said improvements will include the capability to send cc:Mail messages directly from within Notes.

Lotus also plans to develop a "coresident back end" by year

end that will enable both cc:Mail and Lotus message stores to reside on the same OS/2 server, Sall added. The internal gateway of cc:Mail, which exchanges messages between multiple cc:Mail message stores, has already been ported to OS/2, so it can also reside on the common mail server.

The final major step in the effort involves blending cc:Mail and Notes into a single back-end mail engine. Although users will still be able to purchase the products separately, Lotus is developing a single back end that will support a common transport, directory and message store.

"Instead of having two well-integrated mail systems, it will be more like [having] one system," Sall said. These changes are due out next year, he added.

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## 3Com releases port-level security feature for LANs

By Maureen Molloy  
Staff Writer

BOSTON — 3Com Corp. last week announced at NetWorld 92 Boston an enhanced port-level security feature for its local-area network intelligent hub.

The introduction makes the company one of the first hub vendors to provide low-cost, transparent chip-based LAN security as an alternative to standard encryption methods. Implementation of common security methods, such as the use of the Data Encryption Standard, can cost \$600 per port. 3Com's new LAN Security Architecture (LSA) costs \$60 per port.

"When it comes to network security, pricing is key," said Lori Steinmetz, data network manager at the Christian Science Publishing Society in Boston. "Users obviously want more security, but unless you're a niche user like a government defense agency, it's still very difficult to cost-justify."

3Com's LSA — developed by BICC Communications, which 3Com recently acquired — is implemented by adding a daughterboard carrying an application-specific integrated circuit to each

repeater module used with 3Com's LinkBuilder ECS hubs. Each 12-port repeater can be outfitted with three four-port secure repeater chips.

In use, the chips secure communications by delivering clear-text packets to only the destination address and scrambling data into random bits for delivery to every other port.

The LSA chip can also be used to create so-called Closed User Groups to ensure that only certain users have access to particular resources. Another feature, called Disconnect Unauthorized Device, enables LAN administrators to control which devices are permitted on the net. The repeater checks the source address of incoming packets and grants access only to preapproved devices.

LSA is available now.

In a similar announcement last week, Ungermann-Bass, Inc. said it would provide the ASM 320, a 10Base-T module for its Access/One hub that features a daughterboard equipped with a Reduced Instruction Set Computer chip that detects unauthorized access attempts to the LAN. Like 3Com's Disconnect Unauthorized

Device function, it features a filtering capability that prevents unauthorized users from eavesdropping on the net.

Ungermann-Bass has yet to announce pricing for its ASM 320 security offering, but said it will be priced competitively and available in May.

Neither vendor's security techniques limit network performance since the repeaters act in a standard fashion. Encryption methods, on the other hand, require key and password processing requirements that can degrade performance.

Also, unlike encryption, 3Com's and Ungermann-Bass' security features do not require changing anything on end systems, making them transparent to the end user. The security features are available today for Ethernet repeaters only, but both vendors said they will later add security chips on their token-ring and Fiber Distributed Data Interface repeaters.

Steinmetz said some users will be attracted to the comparatively lower cost security solutions, but many others will continue to treat security as an afterthought. "Most companies overlook security initiatives until the net is crippled by inadequate protection," he said. "I really can't say yet whether our organization will be any different."

## Start-up to introduce OSI product suite at CeBIT fair

By Ellen Messmer  
Washington Correspondent

LOS ANGELES — A start-up company established by Retix founder Andy De Mari will make its debut early next month with the introduction of an OSI product suite at the Hannover Fair CeBIT in Germany.

The company, ISOCOR, will introduce six end-user products based on full Open Systems Interconnection stacks, including applications for X.400 electronic mail, electronic data interchange and X.500 directory services.

De Mari, an entrepreneur who started Retix in 1985 and built it into a \$50 million firm by 1990, is regarded by many as a vision-

ary in the OSI industry.

Convinced that the time had come to develop a quality line of end-user OSI applications, De Mari left Retix in late 1990 to launch ISOCOR.

### International presence

De Mari is president and chief executive officer of ISOCOR, which stands for International Standards Open Communications Resources. In addition to its Los Angeles location, the firm has offices in Dublin, Ireland, and Paris.

The ISOCOR executive team includes Frederick Ross, corporate vice-president, previously

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## DEC announces LAN-based deals with Novell, Microsoft

Joint efforts could offer users too many choices.

By Jim Duffy  
Senior Editor

BOSTON — The expanded development and marketing agreements that Digital Equipment Corp. announced last week with Novell, Inc. and Microsoft Corp. represent an effort to provide better support for local-area network environments.

But users and analysts said DEC might be doing more to cloud its desktop strategy than clarify it because the deals provide too many options.

Last week at NetWorld 92 Boston, DEC disclosed the expected agreements ("DEC to resell LAN Manager," Briefs, and "DEC to improve Pathworks integration with NetWare," NW, Feb. 10).

Under the Novell arrangement, DEC and Novell will develop versions of DEC's Pathworks LAN operating system for DOS clients, as well as VMS, Ultrix and the Open Software Foundation, Inc.'s OSF/1 servers that incorporate file and print services from Novell's NetWare.

According to analysts and users, the new versions of Pathworks will let LAN clients use NetWare's Internetwork Packet Exchange (IPX) protocol to share files and printers, and DEC's DECnet and Transmission Control Protocol/Internet Protocol for electronic mail, terminal emulation and wide-area networking.

The Microsoft deal calls for DEC to license the Redmond, Wash., software giant's 32-bit Windows NT operating system and develop a version of Pathworks around it. DEC will also develop a version of Pathworks to support Microsoft's OS/2 LAN

Manager 2.1, which is said to provide better performance than the

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# When it comes to overseas private lines, are you in over your head?



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# FCC rules require carriers to report network outages

By Anita Taff  
Washington Bureau Chief

WASHINGTON, D.C. — The FCC last week adopted new rules that will require carriers to report major outages within 90 minutes, ignoring user pleas to strengthen the requirements so carriers would flag more than just catastrophic failures.

Last September, the Federal Communications Commission proposed that carriers report to the agency all outages that affect 50,000 or more lines for at least 30 minutes. Users complained that these requirements would not catch smaller, more common outages that disrupt business and pressed FCC officials through formal filings and personal meetings to beef up the rules.

The Tele-Communications Association, Inc. (TCA), for exam-

ple, conducted a study of network outages during the second and third quarters of last year and found that, of the 1,057 outages occurring during the period, the reporting requirements would have applied to only four. The TCA and other user groups have lobbied hard on the issue.

Carriers argued the other side, saying that, in many cases, the rules are already too strict and will overburden them as well as FCC resources. Several carriers said they want the FCC to increase the threshold levels — of number of lines affected and length of outage — above which a mandatory report must be filed.

Although the text of the FCC's order will not be released publicly for several weeks, the rules outlined in a public meeting last week are virtually identical to

those originally proposed.

FCC Common Carrier Bureau Chief Richard Firestone said the new rules are meant only as a starting point to set up the framework for reporting outages in an emergency. The FCC already collects information on all outages lasting two minutes or more, although those reports are made on a quarterly basis.

Firestone said changes may be made in its reporting rules since the question of setting an appropriate threshold will be referred to the FCC-sanctioned Network Reliability Council (NRC).

The NRC, which is made up of about 30 industry representatives, user groups and state regulators, was formed last year in the wake of eight major outages that left users without service for hours. The group is chaired by Paul Henson, former head of United Telecommunications, Inc., and is expected to study outage problems and recommend ways for industry players to work

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# Unisys boosts cooperative application processing tool

Company also introduces channel adapter to link A Series mainframes to Unix and OS/2 machines.

By Paul Desmond  
Senior Editor

BLUE BELL, Pa. — Unisys Corp. last week expanded the reach of its Cooperative Computing Environment (CCE), which supports cooperative processing applications spanning Unisys A Series mainframes, Unix and OS/2 machines.

Unisys announced CCE support for most of its A Series mainframes along with a new 20M byte/sec channel adapter that links the mainframes to a Unix or

OS/2 machine.

Previously, CCE was supported only on a low-end Micro A mainframe packaged in a single cabinet with a Unisys 80386-based Personal Workstation<sup>2</sup> (PW<sup>2</sup>) 800 running Unix or OS/2 ("Unisys tools provide for co-op processing," *NW*, Feb. 25, 1991).

That Micro A/PW<sup>2</sup> configuration was dubbed a Cooperative Computing Platform (CCP). Last week, Unisys split out the mainframe processor from the CCP by

adding the new Channel Service bus, which enables the CCP to link to most A Series mainframes at 20M byte/sec. The company has not announced CCE support for the A 1, A 4 and A 6 mainframes but said it is under evaluation.

The CCP can run Unix or OS/2 applications that work with applications on A Series hosts and can serve as a gateway to the mainframe for local or remote devices.

CCE supports cooperative processing or client/server applications, such as providing personal computers with access to host databases and sharing host or LAN peripherals.

The first host to be outfitted with CCE support will be the new A 11 mainframe, also announced last week, which round

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# WilTel positions for new services with net upgrade

By Bob Wallace  
Senior Editor

TULSA, Okla. — WilTel last week detailed network infrastructure upgrades that will position the carrier to provide a wider array of advanced data services and boost its position in the switched voice services market.

WilTel said it is building a network of Northern Telecom, Inc. switches that will enable it to offer a central office switch-based frame relay service and switched T-1, as well as Integrated Services Digital Network, virtual voice nets and 800 service.

The carrier is also expanding construction of a Common Channel Signaling System 7 (CCS7) net, which speeds call setup and

enables its network to carry more traffic.

"People don't take WilTel seriously when it comes to switched services," said Mark Langner, an associate with TeleChoice, Inc., a Montclair, N.J., consultancy. "But installing these switches and CCS7 will definitely change that."

WilTel offered some switched voice services through its Vyvx, Inc. subsidiary, which operates Northern Telecom DMS-250 SuperNodes central office switches here and in Houston.

But WilTel began its thrust into switched voice services in earnest last November when it acquired Telesphere Communications, Inc., a bankrupt national

carrier with switches in Atlanta, Dallas and Los Angeles.

Under the terms of the acquisition, WilTel had the rights to use a Telesphere unit's existing network switches from Digital Switch Corp. (DSC) for only 90 days. Rather than deliver voice and data services from a two-vendor switching platform, WilTel replaced DSC's switches with Northern Telecom DMS-250 SuperNodes. The carrier is also adding new SuperNodes in New York and Chicago.

Last week, WilTel completed the transfer of all Telesphere's traffic to its Northern Telecom switch net, which positions the carrier to broaden its service offerings.

Russ Ray, WilTel's vice-president of engineering, said the company is evaluating a range of services, although he declined to provide details on future plans.

(continued on page 8)

# DG supports Novell's MHS on AViiON Unix server line

Will let DG users swap E-mail with PC LAN clients.

By Timothy O'Brien  
West Coast Bureau Chief

WESTBOROUGH, Mass. — Data General Corp. last week said it has ported Novell, Inc.'s Message Handling Service (MHS) to its AViiON line of Unix servers, making it the first vendor to support the messaging engine in a Unix environment.

The software, MHS for AViiON, runs in tandem with DG's NetWare for Unix on Aviion to pass electronic mail from DG workstation users to personal computer-based NetWare users that also employ MHS-based applications.

MHS for AViiON provides store-and-forward messaging services to the AViiON workstations running an MHS-compliant application such as DG's AV Object Office.

DG is licensing MHS from Action Technologies, Inc. (ATI), an Alameda, Calif., company that originally developed MHS but transferred its development to Novell last year. However, Action Technologies retained licensing rights for non-DOS platforms.

Until now, there has been little compatibility between MHS-based E-mail and Unix-based messaging systems or other enterprise-wide E-mail programs.

DG said it enhanced MHS so it can take advantage of the inherent strengths of the Unix operating system. One change, for ex-

ample, is the ability of MHS to utilize the multiprocessing capability on the AViiON servers, enabling the MHS Unix version to support concurrent messaging links on local- and wide-area networks. In contrast, the DOS-based MHS version is limited because it can only support one messaging link at a time.

DG also said it has incorporated a Microsoft Corp. Windows client shell into the Unix MHS version to accommodate PC users that may be attached to the AViiON server.

In the future, Action Technologies plans to license a version of DG's MHS Unix implementation to other systems vendors that resell Novell's NetWare for Unix software. This could boost the ability for MHS to act as a message transport between PC-based systems and higher performance Unix systems.

DG said Novell certified its MHS for AViiON for compliance with the MHS standard, so applications written for MHS can communicate between PC and AViiON platforms. All future work conducted by Novell on MHS for native NetWare will be available to DG through Action Technologies.

MHS for AViiON, which is expected to be available in May, will cost between \$1,545 and \$2,095 per server, based on the AViiON server configuration. □

# Raft of LAN hub makers unveil token-ring modules

By Maureen Molloy  
Staff Writer

BOSTON — A brigade of local-area network hub vendors last week used NetWorld 92 Boston to roll out token-ring LAN components for their intelligent concentrators.

Chipcom Corp. expanded its token-ring line by introducing three new token-ring LAN cards for its ONline System Concentrator. David Systems, Inc. introduced a token-ring module for its ExpressBus Concentrator, and Ungermann-Bass, Inc. unveiled one of the industry's first token-ring bridge/routers for a hub.

Chipcom's Token Ring Twisted Pair Media Module, which has 20 ports and supports 4M and 16M bit/sec, can be used with shielded and unshielded twisted-pair wire. Devices can be located up to 100 meters from the hub when using unshielded wire to support 16M bit/sec.

As many as seven Media Modules — priced at \$2,150 each —

can be installed in a 17-slot ONline hub for a total of 140 token-ring ports in a single hub.

A second module, the ONline Fiber Repeater Module, supports a fiber-optic token-ring link at distances of up to 2 kilometers between ONline hubs. It is priced at \$2,800.

The third module is a net management card that lets users simultaneously manage token-ring and Ethernet LANs using the Simple Network Management Protocol and other systems supporting the Telnet Transmission Control Protocol/Internet Protocol standard. Pricing has not been set.

All three modules will be available in the second quarter.

Ungermann-Bass unveiled a two-port remote token-ring multiprotocol bridge/router for its Access/One hub that is aimed at simplifying interconnection of token-ring LANs in remote sites to a wide-area network. WAN links supported include fraction- (continued on page 45)

## DEC airs Novell, Microsoft deals

*continued from page 4*

currently supported 2.0 as well as remote dial-in capabilities.

DEC will resell shrink-wrapped, Microsoft-labeled versions of 2.1 and networking applications.

"We're completing the evolution of Pathworks," said Robert Nusbaum, strategic marketing manager of DEC's Personal Computing Systems Group. "We'll incorporate and integrate all of the major network operating system technologies."

Although generally receptive to DEC's intensified personal computer network push, users and analysts said the company could be trying to do too much. They are also unsure why DEC is reselling a shrink-wrapped version of LAN Manager 2.1 when it is developing a 2.1 version of Pathworks.

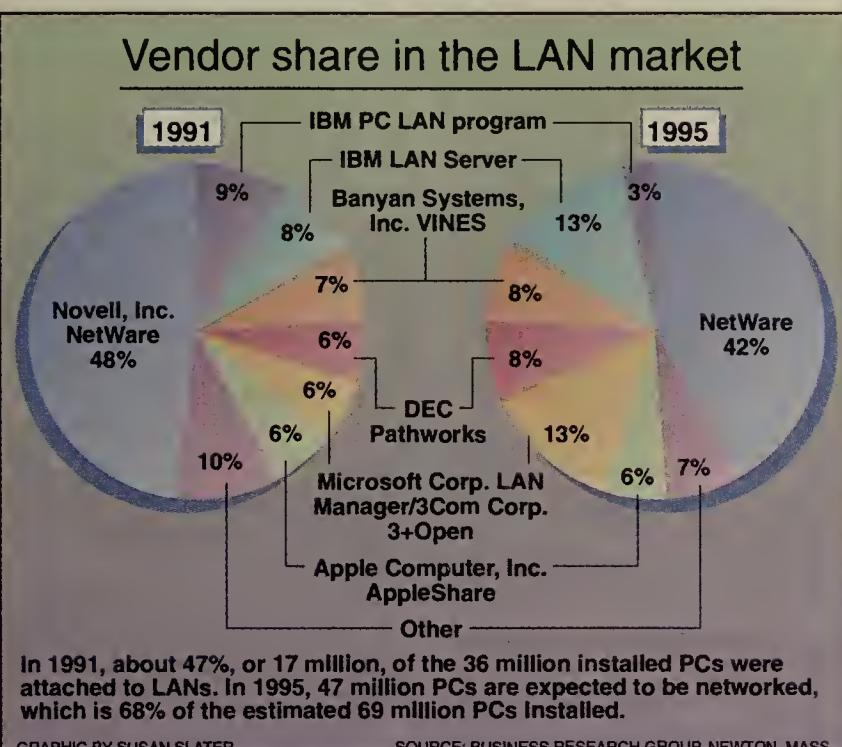
"One of the problems is that they may have too complicated a message to send to people," said Howard Niden, senior manager at Price Waterhouse, a consulting firm in New York. "They might have been better just to go with one [LAN platform]. But the politics of [the arrangements] may have led to some give-and-take."

Gary Mauler, fellow engineer at Westinghouse Electric Corp. in Baltimore, said he believes DEC will have to reconcile pricing issues between Microsoft LAN Manager 2.1 and the upcoming version of Pathworks that supports LAN Manager 2.1.

"There are two different licensing structures," Mauler said. "LAN Manager is licensed per server, and Pathworks is licensed per client. If you have a couple hundred users, it would be much cheaper to go with LAN Manager 2.1. If you have a couple of users, it would be much cheaper to go with Pathworks. It's going to be a

academic affairs at New York Law School in New York agrees. "DEC has a history of trying to be all things to all people," he said. "They'd prefer people buy anything, even subway tokens, from DEC."

On the NetWare front, DEC's Nusbaum declined to disclose specifics on how NetWare and



confusing thing for customers to figure out which one they need."

Others, however, believe if DEC's PC strategy is to succeed, they have to cover all the bases. "DEC wants to become your computer supermarket," said Tom Wood, an analyst at Business Research Group in Newton, Mass. "Supermarkets have both Wheaties and Total."

John Farago, associate dean of

Pathworks interoperability will be achieved. He said DEC is looking at Novell's IPX and NetWare Core Protocol technology.

As for the Microsoft arrangement, Nusbaum would not say when Pathworks for Windows NT would debut. He did say Pathworks with LAN Manager 2.1 support will emerge later this year and pricing will be disclosed at that time. □

## Standard allows mail exchange

*continued from page 2*

Already, operators of three widely used Unix-based Internet message systems — Elm, Xmail and Carnegie-Mellon University's Andrew System — have agreed to incorporate MIME into their next software release.

Several commercial organizations in the U.S. and Australia have also committed to releasing MIME-compliant message systems.

Rose and other developers have written extensions to Unix electronic mail user agents that permit users to generate and read MIME-based multimedia messages with only a minor upgrade to their existing messaging software. Some of the developers are making MIME software extensions freely available on the Internet.

"MIME has generated quite a bit of excitement in the development community," Rose said.

The software is an extension to Request For Comment (RFC) 822, the Internet mail standard that specifies a structured header followed by a body of ASCII text. MIME adds two new header fields to RFC 822: content-type and content-transfer-encoding.

The content-type field labels the message content as something other than ASCII text. The MIME document defines eight general content-types: text, image, audio, video, message, binary, application and multipart.

For each content-type, users can also choose a subtype specifying the specific media format or program in the body of the message.

For example, users can specify "image" as the content-type and "Group III fax" as the subtype. This tells the recipients that to read the body of the message, they must run it through a program that can interpret the Group III fax format or they must be able to send the message to a nearby fax machine.

Message content-types allow users to forward messages within messages, and multipart content-types enable users to send messages consisting of multiple types and subtypes, such as a text message augmented with audio, video and expanded-font characters.

The content-transfer-encoding field specifies the encoding technique used to send binary 8-bit data within a 7-bit ASCII for-

mat. MIME specifies two encoding techniques: base64 and quoted-printable. Base64 encoding is used primarily to send binary data, while quoted-printable is used primarily to send ASCII text with some non-ASCII characters.

"The MIME standard does not define a standard data format, but rather a standard mechanism for labeling data and combining it into multipart messages," said Nathaniel Borenstein, technical staff member at Bell Communications Research, Inc. in Morristown, N.J., and cochair of the working group that developed the MIME standard.

Borenstein added that MIME is easily extensible. Users can define additional content-types as long as they conform to the MIME standard and they can specify an infinite number of subtypes.

Ironically, many X.400 proponents contributed to the development of MIME, Borenstein said. MIME is expected to ease the problems of sending X.400 messages through an X.400/Internet mail gateway, he said. Currently, these gateways edit out a lot of X.400 information because of the limited functionality supported by Internet mail and its transport mechanism the Simple Mail Transport Protocol. □

## AT&T breaks new ground

*continued from page 1*

Contract deals are hybrids between traditional contracts and tariffs because they must be available to all customers and AT&T must file a synopsis of each contract — essentially, an abbreviated tariff — listing all terms, rates and volume discounts.

Although FCC rules say the deals must be available to all customers that can meet the contract commitment levels, critics charge that AT&T will be able to discriminate against potential users by withholding the contract rates.

In a separate proceeding going, several resellers claim AT&T is refusing to offer them Option 58 under Tariff 12 even though FCC rules specify that Tariff 12 deals cannot be withheld from any user willing to commit to the terms of the deal.

Some also question the legality of charging less for the same services offered through contract than through tariff. Because the contracts are generally available, the FCC has said that no such problems will arise.

The first deal filed last week, dubbed Contract Tariff No. 1, is for Megacom service geared to a reseller. The deal carries an 18-month term, and the customer must generate a minimum traffic expense of \$25,000 to \$120,000 per month.

Under the deal, prices for the

service are three cents for the initial 18 seconds and one cent for each additional six seconds. The user also receives a 10% discount on these rates, plus additional discounts based on usage. Discounts range from 2% for a commitment to spend \$25,000 per month to a maximum of 11.25% for spending \$120,000 per month.

In addition to general criticisms of contract deals, Contract Tariff No. 1 may have special legal problems because it is virtually identical to a proposed tariff AT&T filed on Dec. 4, dubbed Inter-Exchange Carrier Service (IECS).

IECS would have offered a Megacom service geared toward resellers. According to sources, AT&T had to withdraw IECS after the FCC threatened to reject it because it excluded resellers that did not own switches. The contract filed last week contains the same provision.

AT&T's Contract Tariff No. 2, already offered to an unnamed carrier, offers Accunet T45 service at discounts about 40% less than tariffed rates. The \$660,000-per-year deal includes four T-3 lines and associated access connections of no more than 140 miles. It is limited to customers that sign up before May 31 and have the service installed by June 30. The contract term is one year.

Mike Hills, president of HTL Telemanagement, Ltd., a consulting firm in Burtonsville, Md., said the tariffed price for four T-3 lines of the same distance is about \$1 million annually. □

## NetFRAME preps new superserver

*continued from page 2*

cards are expected to be based on the 80486 50-MHz processor.

According to users briefed on the new model, the new application cards enable the NF500 to simultaneously run multiple applications on the same unit.

One user, who requested anonymity, said the NF500's main processor could be running Novell's NetWare. A user could then employ an application processor card to run OS/2 supporting OS/2 SQL Server and another card to run NetWare supporting an Oracle Corp. NetWare Loadable Module database — all within the same box.

"The new server enables users to run two to four completely different applications," the user said. "That's why it's now an application server."

The new servers will also feature redundant I/O subsystems and cooling systems, as well as a new real-time service processor that enables multiple processors to handle the same application.

Like the NF400, the NF500 supports four random-access memory boards.

The new model, however, can support 64M-byte boards for a total of 256M bytes of RAM. This is four times the memory supported by the NF400.

According to Bruce Williams, manager of systems integration at Aldus Corp. in Seattle, a large NetFRAME user, the new memory boards are expected to be available for use in the NF400 model. "I won't lose my investment in my hardware, and at the same time, I get to move toward larger memory capacity," he said.

Williams said many of the optional redundancy features for the NF400, such as power supplies and automatic switching among cards, will be standard on the NF500.

Pricing for the NF500 was not available.

Paul Johnson, a vice-president at The First Boston Corp., a brokerage firm in New York, said there could be a big market for the new NetFRAME superservers.

"This is a market that is about to open up," Johnson said. "Users are going to realize that this is a very cost-effective way to do server implementations and that high-end PCs just don't cut the mustard in the new networks that are emerging." □

## IBM intros SNMP-based mgmt. system

BOSTON — As expected, IBM last week unveiled Networking Services (NS)/DOS, a significantly revamped version of its Advanced Program-to-Program Communications software that uses about half the memory of its previous offering.

NS/DOS is software that enables a DOS workstation to communicate with other devices in an IBM Advanced-Peer-to-Peer Networking (APPN) net using LU 6.2 protocols. NS/DOS was expected and has been in beta test within IBM for at least five months ("New DOS version of IBM's APPC requires less memory," *NW*, Oct. 7, 1991).

According to IBM, the new product will run within a DOS or Microsoft Corp. Windows/DOS workstation, support the Common Programming Interface for

Communications (CPI-C) and — most importantly — take up no main workstation memory in a DOS 5.0 machine.

The software consists of an 80K-byte module and a 40K-byte version. According to IBM, users can load the 80K-byte module into 640K-byte main workstation memory or DOS 5.0 upper memory. The 40K-byte piece can be loaded anywhere, including into Microsoft Windows memory.

In contrast, IBM's older APPC/PC product consumed 225K bytes of main DOS memory, leaving little of the 640K bytes for large applications. IBM said APPC/PC will be phased out.

In its first release, NS/DOS will be offered as a Low Entry Networking node. It will also

support asynchronous or dial-in communications — a feature not offered in the previous DOS-based version. Pricing and availability have not been disclosed.

### Fault-tolerant PS/2s

In a separate action, IBM also discussed plans to support Novell, Inc.'s System Fault Tolerant III (SFT III) technology on its Personal System/2 Models 90 and 95 when it is available. SFT III goes beyond current disk-mirroring technology by allowing the user with two servers running parallel to have the processes as well as the files mirrored.

IBM also said future releases will meet C2 security standards and will be based on the Micro Channel Architecture.

— Caryn Gillooly

ence that the RBHCs would use to acquire the systems needed to support SMDS management.

The TA defines an SMDS-oriented Simple Network Management Protocol Management Information Base (MIB) that would enable an SNMP management system to handle devices in an SMDS network.

This will allow a network manager to add and delete addresses, among other things. Until network management for SMDS is defined, users will have to submit a separate service order to the RBHC for each address addition or deletion.

The MIB will support group addressing, which enables a network manager to send one command in order to set addresses for multiple stations on an SMDS network. The TA also delineates how network managers can perform address screening on the fly from a network management workstation. Address screening is the ability to specify which devices can send and receive packets over SMDS.

According to Piscitello, address screening is a fundamental SMDS feature.

To perform group addressing and address screening, the SNMP station will exchange messages with an agent on the appropriate operations support system in the RBHC's network, he said.

Tom Farese, another TA author and Bellcore technical staff member, explained that network managers will need SNMP to access raw SMDS usage data for use in chargeback applications.

The workstation running the SNMP-based network management system or a separate terminal that uses the Transmission Control Protocol/Internet Protocol's File Transfer Protocol would be used to access that information. Companies can establish a link within the SMDS Subscriber Network Interface or use a dial-up line to access the RBHC computer containing the usage data.

"If I'm billed a usage [element] for SMDS, I better have the usage data so I can charge back internal users," Kwatney said. "If I'm charged a flat rate, usage data is a little less important."

Kwatney said he could not obtain any SMDS traffic data during the school's SMDS trial. □

reliable and offer stronger management features than IPXs from StrataCom. A central office-based frame relay service would also support higher speed frame relay.

Ray added that there is some customer interest in ISDN Primary Rate Interface (PRI) service, and the SuperNodes have been equipped to support ISDN PRI.

"We don't have any immediate plans to offer ISDN, but we wanted to be in a position where we could deliver it on short notice," he said. "Everything depends on customer demand."

WilTel is also interested in

rolling out a virtual network service nationwide in the near future, which the carrier views as essential to its long-term success and as a key element of custom network packages.

WilTel President Roy Wilkens admitted that the company has been losing large corporate customers to larger rivals that can offer custom network packages comprising switched and private-line services ("WilTel airs plan to enter switched voice service market," *NW*, Nov. 4, 1991).

The carrier also plans to roll out 800 service in the next two to three months, Ray said. □

## IBM shares vision for LANs

*continued from page 1*

Server] will be a single set of services that will work across multiple platforms, the key interfaces to which will be open," said Art Olbert, personal systems director for LAN systems at IBM in Somers, N.Y.

According to IBM, the LAN Server facelift will occur over the course of two phases.

In the first phase, which IBM has already embarked upon, the vendor will forge alliances with other companies to create interoperability between the current version of LAN Server and major applications. IBM will also add support for a broad array of hardware platforms.

Once completed, IBM will focus on delivering tool kits, APIs and the products necessary to support the open LAN Server environment.

IBM has already established alliances with several vendors to ensure interoperability with the current LAN Server software.

IBM pointed to recent alliances with Lotus Development Corp. and its cc:Mail division, which allow Notes and cc:Mail, respectively, to run within LAN Server environments.

In other areas, IBM has announced support of Microsoft Corp.'s Network Driver Interface Specification, has provided OS/2 LAN Server on Compaq Computer Corp. servers and has been reselling Novell, Inc.'s NetWare.

"We're doing Phase 1 right now by making sure all clients can get to all services today," said John Baggett, senior engineer/scientist at IBM's personal systems programming group in Austin, Texas.

Under the second phase, IBM plans to deliver a distributed LAN Server version that will not only offer compatibility with earlier LAN Server products, but will also provide the basis for users to run distributed applications across different brands of hardware and software platforms.

"What we are promising is that a NETBIOS client will be able to access a TCP/IP server transparently under this new open distributed LAN system," Olbert said.

IBM intends to offer the tools and APIs to help users and vendors develop applications or complementary services to run in IBM's distributed LAN environment.

Key to the LAN Server remake is OSF's DCE and its Distributed Management Environment. The DCE is software on top of which distributed applications can be developed, executed and maintained. It is operating system- and network-independent.

IBM said it would support key portions of the DCE, such as its remote procedure calls, distributed directory service, time service,

file system and security features.

"We'll build on the DCE, but there are a lot of things that are not covered [within the DCE specifications] such as messaging and systems management," Olbert said. "DCE is just part of what we're building, but it certainly is not the whole thing."

Consequently, IBM said the open version of LAN Server will support the Vendor Independent Messaging (VIM) specification, Transarc Corp.'s Encina on-line transaction processing technology and IBM's own Distributed Relational Database Architecture.

Although IBM has said it would support the DCE on OS/2, OS/400 and MVS software platforms, it had not offered specifics before last week ("IBM unveils bevy of client/server net components," *NW*, Sept. 16, 1991).

The new network operating system will run on nets supporting LU 6.2, IBM's Network Basic I/O System, Transmission Control Protocol/Internet Protocol and Open Systems Interconnection transport protocols, Baggett said. The new LAN Server will be manageable through IBM's NetView management system, he added.

Lee Doyle, a LAN analyst at International Data Corp., a Framingham, Mass., research firm, said IBM's remarks indicate that the vendor wants to broaden the appeal of LAN Server.

Charles Robbins, director of communications research at Aberdeen Group, Inc., a Boston-based consultancy, said the strategy is a significant step.

"I'm fascinated by it, but there's a lot of work that needs to be done before a product will be available," he said. □

## Bellcore to unveil plan

*continued from page 1*

Although Temple participated in a Bell Atlantic Corp. SMDS trial that ran from October 1990 to March 1991, the school has not decided whether it will use SMDS when the service becomes generally available.

SMDS is a high-speed, packet-oriented digital data service capable of supporting transmission speeds between 1.544M and 155M bit/sec. The service promises to be more cost-effective than private lines for certain applications such as local-area network interconnection.

### SMDS requirements

The TA presents Bellcore's preliminary view of proposed generic network management requirements for SMDS. It is intended to solicit comments from users, computer and network equipment vendors, net management suppliers and RBHC staffers that plan and procure products to support SMDS.

If the TA is well received, Bellcore will issue a technical refer-

## WilTel positions for new services

*continued from page 6*

He said WilTel is seriously considering a central office-based frame relay service using the SuperNodes, which have been equipped to support such a service.

WilTel already offers WilPak, a public frame relay service based on StrataCom, Inc.'s IPX 32 multiplexers. WilTel finds the central office-based approach attractive because the carrier's Northern Telecom DMS-250 SuperNodes boast higher capacity, are more

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# INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

## Worth Noting

AT&T recently reported the shipment of its first 5ESS central office switch to Japan. The switch was delivered to Nippon Idou Tsushin Corp. in Tokyo for use in a digital mobile telephone system.

## People & Positions

Douglas Maine, formerly Southern division president at **MCI Communications Corp.**, was named senior vice-president and chief financial officer of the carrier. Maine succeeds **Gene Gabard**, who plans to pursue other business interests.

MCI also announced that **Gary Parsons**, formerly senior vice-president of engineering and support services for MCI, was appointed president of the Southern division where he will be responsible for operations, sales and marketing in 14 states in the Southern U.S.

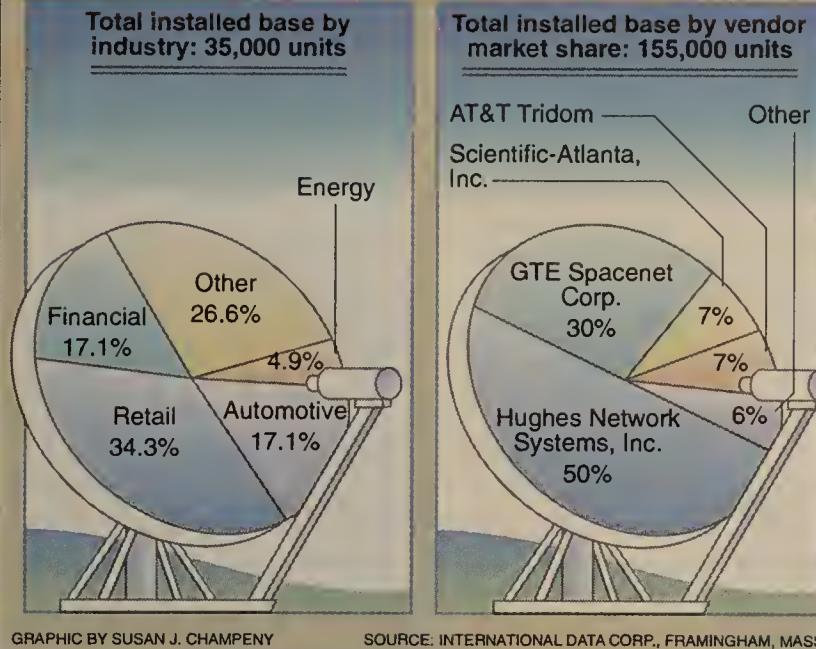
**Motorola Codex** last week announced the appointment of **Mike Taylor** as senior vice-president of engineering.

Before joining Motorola Codex, Taylor was responsible for systems engineering at Digital Equipment Corp. Previously, he held posts in data communications, computer systems and software at AT&T Bell Laboratories.

Taylor said Motorola Codex's engineering organization will continue to serve customers who need data communications equipment.

**Joseph Linde**, founder and chairman of the board of **Chipcom Corp.**, recently said he will relinquish day-to-day control of the company to **Rob Held**, Chipcom's president and chief executive officer, on March 1. Linde, who will remain chairman of the board, intends to explore entrepreneurial activities outside of Chipcom. □

## 1991 U.S. VSAT market



GRAPHIC BY SUSAN J. CHAMPEY

SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

## Microcom to buy systems mgmt. firm

By Bob Brown  
Senior Editor

NORWOOD, Mass. — Microcom, Inc. recently announced plans to acquire Client Server Technologies, Inc. (CST), a 2-year-old firm that plans to offer systems management software for devices on a local-area net.

Microcom officials declined to disclose financial terms of the agreement except to say the acquisition will be a cash transaction. Until now, Microcom has held a minority stake in CST, based in New Rochelle, N.Y.

CST is developing a new LAN

management product dubbed LANLord, which will enable LAN administrators to monitor and control software activity on devices attached to a Novell, Inc. NetWare LAN. CST plans to launch LANLord in late April.

The acquisition of CST fits in well with Microcom's refocusing of its product line on LAN offerings. The company already offers bridge/routers, as well as Carbon Copy and Relay Gold personal computer connectivity software, said Jim Dow, Microcom's president and chief executive officer.

According to Dow, CST will operate as a separate subsidiary, and he expects the acquisition to be completed within 60 days.

Emerick Woods, president of CST, said his company is focusing its management products on the upper four layers of the Open Systems Interconnection model,

(continued on page 10)

## INDUSTRY BRIEFS

**IBM, Core in server pact.** IBM last week said it struck an agreement with Core International, Inc. under which Core will build an enhanced network server using fault tolerant array technology based on IBM's Personal System/2 computers. Under the terms of the deal, Core will build and offer the Core Model 95 Network Server, which is based on the IBM PS/2 Model 95 and Core's disk technology rather than IBM's controllers or hard disks. The product will use a high-speed Core controller, featuring a 32-bit Small Computer System Interface design. It will enable disk drives to transfer information up to four times faster than standard controllers.

**Motorola, Northern Telecom ink deal.** Motorola, Inc. and Northern Telecom, Inc. last week announced a joint venture dubbed Motorola-Nortel Communications Co. to sell and service cellular telephone networks to public telephone operators throughout the U.S., Canada, Central and South America and the Caribbean. The new company, which plans to begin operations in the second quarter, will sell and support Motorola's EMX 2500 switching equipment manufactured by DSC Communications, Inc. system and Northern Telecom's DMS-MTX switching equipment made by Novotel, Inc. □

## Software shops lead pack of net start-ups

Net management, LAN hub and wireless net firms hold best promise of changing face of users' nets.

*This is the first of a two-part series.*

Start-ups focusing on network software development are among the companies most worth watching in 1992, according to industry analysts and venture capitalists polled in an informal *Network World* survey.

Network management platforms such as Hewlett-Packard Co.'s OpenView and standards such as the Simple Network Management Protocol are now stable and popular enough to encourage software developers to launch complementary applications for them.

The local-area network hub and wireless LAN markets are also proving to be fertile ground for start-up firms, industry observers said.

This series will examine some of the emerging companies that could have an impact on the industry in years to come.

### Remedy

What do you get when you team a Sun Microsystems, Inc. executive who oversaw the development of SunNet Manager with HP's head of marketing for OpenView? You get Remedy Corp., a Sunnyvale, Calif., software maker that builds net management applications designed to run on top of SunNet Manager and OpenView, two of the most popular integrated network management platforms available.

Remedy was founded in 1990 by Larry Garlick, who oversaw network products as the former vice-president of distributed systems at Sun, and David Mahler, former marketing manager of OpenView at HP. Garlick is Remedy's chief executive officer, and Mahler is the company's vice-president of marketing.

Remedy is building generic management applications that support vendors' device-specific management applications on popular net management platforms.

This relieves LAN equipment vendors of the need to address common management functions and lets them focus their time and efforts on tailoring management programs for the particular needs of their products. Remedy's first application, the Action Request System, is an automated trouble-ticketing application that began

shipping in December.

Remedy splashed onto the scene last September, when the company's founders announced their plans at a press conference flanked by representatives from SynOptics Communications, Inc., 3Com Corp. and other equipment vendors.

"The concept behind Remedy is that there are a lot of companies making routers, bridges and

**Remedy**  
Corporation

Based: Mountain View, Calif.

Founded: 1990

Primary business: Multivendor, platform-based, network management application software

hubs that are also developing network management products. But no company can possibly do it all," said Todd Dages, director of data communications research at The Yankee Group, a market research firm in Boston. "Remedy will off-load some of the responsibility from these vendors."

The Action Request System runs on SunNet Manager and will soon be available for OpenView. Remedy plans to support Novell, Inc.'s NetWare as its next major platform, Mahler said.

Remedy intends to stay small — the company currently employs only 15 people — and is scheduled to roll out two new applications per year, according to Mahler. He declined to say what new applications are on tap, however.

— Bob Brown

### HyperDesk

HyperDesk Corp., built on the ashes of a canceled Data General Corp. software design project, is set to realize the fruits of five years' labor.

HyperDesk was formed by 15 former DG staffers after DG cut funding for a distributed computing project they had worked on for three years. The firm expects its first product to debut in March.

According to Herbert Osher, former division director for the DG project and now HyperDesk's president, the company's mission is to enable developers to build software that not only integrates diverse hardware platforms, but

(continued on page 10)

## Turning on the spotlight

continued from page 9

also eases the creation of distributed client/server applications. Its first product, called the Distributed Object Management System (DOMS), meets that goal.

DOMS is based on object-oriented technology and is the first

offering to comply with the Object Management Group's (OMG) Object Request Broker, a standard communications specification that establishes links between client applications and software objects residing on different network nodes for application processing.

The product helps developers build software objects, which

shortens application development time because objects are reusable.

It also helps create distributed applications because the Object Request Broker uses the OMG standard interface to link software objects across an enterprise network.

DOMS lets developers incorporate several hardware plat-

forms and older applications in its architecture, enabling users to integrate their traditional systems with newer applications using DOMS and its software objects.

"We provide the best of both worlds," Osher said. "DOMS gives users a client/server platform without [making them] abandon their hardware or appli-

**HyperDesk**  
CORPORATION

Based: Westborough, Mass.

Founded: 1990

Primary business: Software tools for building distributed computing applications on multivendor platforms

cation investments."

DOMS currently runs on Unix or Microsoft Corp. Windows workstations, DG AviON servers and Sun SPARCservers running Unix, although the company plans to port the system to other platforms, including IBM's RISC System/6000.

"The product sits on top of the operating system," Osher explained. "The developer doesn't

(continued on page 24)

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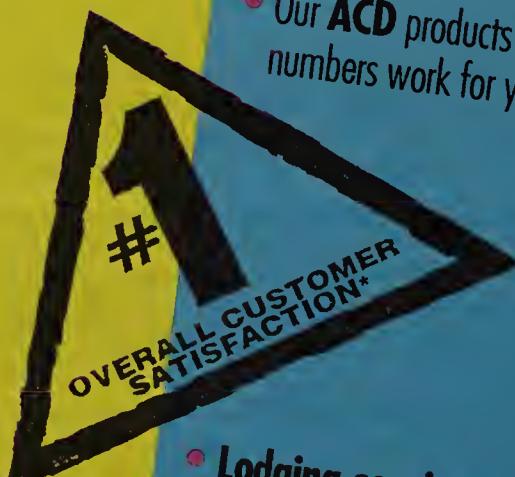
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residing on NetWare LANs and, eventually, Microsoft Corp. LAN Manager nets. Initially, the software will run on DOS and Windows clients but will run on OS/2 and Apple Computer, Inc. Macintosh PCs in the near future.

The agents report net events, such as exceeding a threshold, to LANLord Server software running on a dedicated OS/2 system that collects and stores network information. Later this year, the server product will be upgraded to support servers running Microsoft's NT operating system.

LANLord Server relays the data to LANLord Manager, a systems management console based on a nondedicated PC running Microsoft Windows. The product can also be set up to operate in tandem with LAN management systems such as Hewlett-Packard Co.'s OpenView. □

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# TELECOMMUNICATIONS

CARRIER SERVICES, CENTREX, CPE, WIRING SYSTEMS AND BYPASS

## Worth Noting

**I**f you ignore toll fraud for an entire day, you could be \$10,000 to \$15,000 in the hole by the next morning."

**Kevin Hanley**  
Systems management  
Marketing manager  
AT&T  
Bridgewater, N.J.

## Carrier Watch

**Southwestern Bell Telephone Co.** last week said it will give MegaLink III T-1 customers in Texas one month of free service if any of their lines experience an outage of four hours or more.

If Southwestern Bell is at fault for the outage and service is not restored within four hours after the problem is reported, the customer will be credited for the full month of service on the following month's bill.

"[This is] the first time we have offered a one-month free service guarantee with any tariffed offering," said Tom Zurheide, Southwestern Bell's district marketing manager for customer data services. The telephone company offers prorated rebate plans that issues credits based on the length of the service outage.

Zurheide said Southwestern Bell is considering extending the T-1 service guarantee to Arkansas, Kansas, Missouri and Oklahoma.

**LCI International**, formerly Litel Telecommunications Corp., recently announced availability of two ringdown services for financial services firms and brokerage houses that need voice links between Chicago and New York.

Both of the services, Basic 32 and Premium 32, provide a 32K bit/sec link between the two cities. With Premium 32, however, technicians in LCI's Network Control Center in Columbus, Ohio, can reroute voice traffic around a downed facility. □

## AT&T's Megacom 800 Plus suits a beta user's needs

Firm says expanded support services worth price.

**By Bob Wallace**  
Senior Editor

WAYNE, N.J. — Despite two outages during its beta test of AT&T's Megacom 800 Plus Service, GEC Marconi Electric Systems Corp. said it is generally pleased with the new service offering.

Tony Cooper, facilities systems manager for the electronics firm, said the company does not mind paying more for the extra customer service and support that comes with the offering, which will be generally available next month ("Carrier seeks FCC go-ahead on enhanced 800 service," *NW*, Feb. 10).

AT&T charges users roughly 7% higher usage rates and at least 50% higher monthly service charges for Megacom 800 Plus, which is installed and repaired more quickly and comes with money-back guarantees not available with Megacom 800.

"We're very pleased with the higher level of customer service we receive with Megacom [800] Plus," Cooper said. "When we had outages, we got right to the person who could solve them."

With Megacom 800 Plus, each customer is assigned a dedicated service technician and AT&T guarantees to resolve problems in five hours or less, compared to eight hours with Megacom 800.

**W**hen we had outages, we got right to the person who could solve them. □

GEC Marconi put the guarantee to the test late last year when it twice lost Megacom 800 Plus at its field support center here. The company's field sales personnel and technicians rely on the facility's staff for pricing, product information and diagnostic data.

GEC Marconi reported the first outage to its technician at AT&T's dedicated Plus provisioning and service center. "Our technician took over from there and got right on the problem," Cooper said.

"We'd told the technician when we began using the service that in the event of an outage, we wanted a status call every 30 min-

utes until the problem was solved," he said. The technician called in much more frequently and Megacom 800 Plus was restored in one hour — well under the carrier's guaranteed five-hour interval.

### Second outage

The company was not as fortunate the next time around when a problem knocked out service for more than five hours, Cooper said.

**A** company has to rely on the skills of the technician that answers the hot line [call]. □



"Although we lost the service for a long time, we always had the feeling that AT&T had the situation under control," he said. "And we were always kept well informed."

AT&T credited GEC Marconi for the second outage because it exceeded the guaranteed five-hour service restoration interval.

"It was critical that we get the service restored as soon as possible because the center fields a few hundred calls a day," Cooper said. "Not one of them is unimportant. Any service interruption is noticeable to our field staff."

GEC Marconi was informed by AT&T as to the cause of the outages. The company has not experienced additional service interruptions.

Cooper said companies with mission-critical call center applications want their own carrier technician. "The way things are today, a company has to rely on the skills of the technician that answers the hot line [call]," he said. "That isn't always good enough."

He added that the Plus offering's service restoration interval "is the best we've seen from any carrier." The company recently discontinued using US Sprint Communications Co.'s 800 service because it did not perform well.

Cooper said AT&T provisioned the service well within its 15-day interval and said Megacom 800 Plus has met AT&T's availability rating. □

### Cost of shifting utility microwave nets to new frequencies

#### 10 hardest hit states

State	Number of microwave stations	Cost to relocate* (in millions)
California	2,241	\$448
Texas	2,215	443
Florida	850	170
Louisiana	754	151
Pennsylvania	676	135
New York	655	131
Colorado	629	126
New Mexico	600	120
Washington	568	114
Arizona	561	112

\*Includes equipment and operational charges

GRAPHIC BY SUSAN J. CHAMPEONY

SOURCE: UTILITIES TELECOMMUNICATIONS COUNCIL

## FCC details spectrum reallocation plan

Moves ahead with plan to displace microwave users despite protests, congressional action.

**By Anita Taff**  
Washington Bureau Chief

WASHINGTON, D.C. — The FCC continues to press ahead with its effort to clear spectrum for new wireless services, despite congressional inquiries and protests from microwave users in the targeted bands.

Last week, the Federal Communications Commission released proposed rules for taking the frequencies between 1.8 GHz and 2.2 GHz away from microwave users and allocate them to emerging wireless services. Among the technologies under consideration for the slot are personal communications networks (PCN), wireless private branch exchanges and wireless local-area networks.

The FCC decided on the spectrum-shifting plan last month and, since then, users have protested vehemently to the agency directly as well as through Congress. During the past few weeks, the FCC has received letters from at least three congressmen questioning whether the agency has thoroughly considered microwave users' concerns.

In the most outspoken letter, Sen. Tom Harkin (D-Iowa) said, "It appears unfair to me to change the allocations of a portion of the microwave spectrum after an industry has made a substantial investment in technology to use it."

Sen. Pete Domenici (R-N.M.) and Rep. George Gekas (R-Penn.) also sent letters to the FCC.

Microwave users have complained to Congress that the agency, which has gained momentum in making room for new technologies, is deaf to their con-

cerns. A letter sent to Harkin from Dennis Hill, data retrieval manager for the Northwest Iowa Power Cooperative, voices just that complaint.

The FCC is trying to railroad this issue through without any consideration for current spectrum users, Hill stated in the letter. "Northwest Iowa Power Cooperative and others have done everything possible to relay to the FCC the extreme importance of this issue, but they don't seem to care and appear to have already made up their minds."

Microwave users claim it will cost hundreds of millions of dollars to move their networks to a higher frequency. The Utilities Telecommunications Council, which represents utilities that use microwave networks, estimates that it will cost members \$800 million to move.

Even worse, microwave users say moving could jeopardize their networks. They would probably be assigned to higher frequencies, which tend to be less reliable than their current bands. Many of the applications supported on microwave networks involve public safety and remote monitoring, all of which demand an extremely high level of reliability.

In its proposed set of rules, the FCC last week stated its sensitivity to user concerns.

"Our intent is to reaccommodate the 2-GHz licensees in a manner that is most advantageous for these existing users, least disruptive to the public and the most conducive to the introduction of new services," the agency said.

The commission proposed demoting all microwave users ex-  
(continued on page 45)

# Datacomm Commentary

“Access is as important as information: that’s why LEXIS® 2000 MODEMS are UDS”

MeadDataCentral



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**UDS**  
MOTOROLA

# DATA COMMUNICATIONS

PRODUCTS, SERVICES, ARCHITECTURES, STANDARDS AND NETWORK MANAGEMENT

## Worth Noting

**S**ales of Switched Multimegabit Data Service (SMDS) equipment is expected to reach \$340 million by 1996, up from \$25 million in 1991, while revenue from SMDS services is estimated to reach \$30 million this year and grow to \$800 million by 1996, according to The Pelorus Group, Inc., a Raritan, N.J., telecommunications market research firm.

## Data Packets

**AT&T Paradyne and Ascend Communications, Inc.** recently announced an agreement to jointly develop and distribute products for the bandwidth-on-demand market. The products will be based on AT&T Paradyne's Acculink multiplexers and Ascend's inverse muxes. They will address such markets as videoconferencing, local-area network internetworking and T-1 backup and overflow.

**Netrix Corp.** recently announced the new Voice/Fax Module (VFM), a device that enables Netrix's #1-ISS multiplexers to support switched voice and Group III facsimile. The VFM is the first fruit of Netrix's joint development agreement with **Pacific Communications Sciences, Inc. (PCSI)** of San Diego.

The VFM, which is sold by PCSI as the CS8000 Voice/Fax/Data mux, supports compressed voice between 4.8K and 32K bit/sec, fax between 4.8K and 9.6K bit/sec, and as many as 20 data ports or a combination of voice and data.

Scheduled for general availability in the third quarter, the VFM will be priced from \$5,000. □

## DEC enhances tool used to link micros to VAX minis

Adds support for more types of clients, protocols.

By Jim Duffy  
Senior Editor

**MARLBOROUGH, Mass.** — Digital Equipment Corp. last week unveiled a new version of its software used to integrate personal computers into VAX-based transaction processing environments that adds support for multiple local-area network transport protocols and clients based on different operating systems.

DEC's Desktop for Application Control and Management System (ACMS) is client-based software that allows LAN-attached microcomputers to access and execute transaction processing applications on a VMS host.

With its client/server architecture, Desktop ACMS off-loads some of the processing duties, such as screen presentation services, from VMS servers to LAN clients. It also allows applications on the desktop to share data with applications on the VMS server.

Version 1.1 of Desktop ACMS adds support for the Transmission Control Protocol/Internet Protocol and Novell, Inc.'s Internetwork Packet Exchange (IPX) transport protocol, as well as The

Santa Cruz Operation, Inc.'s SCO Unix and DEC Ultrix- and VMS-based clients.

The previous version of Desktop ACMS supported DECnet protocols and MS-DOS, Microsoft Corp. Windows 3.0 and Apple Computer, Inc. Macintosh clients.

Support for IPX, TCP/IP, SCO Unix, Ultrix and VMS opens up DEC's transaction processing environment to more participants, said Ted Grenham, marketing manager for DEC's corporate information systems unit.

Transaction processing environments are usually characterized by "lots of users sharing data and mission-critical applications" such as order entry and inventory control, Grenham said.

According to DEC, IPX and TCP/IP support lets users of Novell's NetWare and TCP/IP networks easily integrate their desktop systems into DEC's transaction processing environment.

"It was a NetWare announcement," said Dave Smith, an analyst with International Data Corp., a research firm in Framingham, Mass. "ACMS now has

(continued on page 14)

## Gandalf unveils gateway for linking WANs to LANs

By Jim Duffy  
Senior Editor

**CHERRY HILL, N.J.** — Gandalf Systems Corp. recently unveiled a gateway with integrated bridging and routing for connecting LAN-attached devices to corporate backbone networks.

The Access 2590 LAN/WAN Communications Gateway connects Ethernet local-area networks to X.25 and frame relay networks at speeds ranging from 1.2K to 2M bit/sec. The device sports one Ethernet port and four wide-area network links, according to Joe Theranger, Gandalf product manager.

One of the target markets for the 2590 is Gandalf's installed base of statistical multiplexer users that want to support LANs and X.25 packet-switched services, Theranger said.

"This is geared for nets where one end is serial and the other is LAN," he said. "Our installed base of stat mux users just plugs this in and then they have Telnet and [Local Area Transport]."

In addition to X.25 and frame relay, the 2590 supports Gandalf's proprietary asynchronous and synchronous protocols, Digital Equipment Corp.'s LAT and Transmission Control Protocol/Internet Protocol's Telnet terminal-emulation protocol, he explained.

It also performs IP routing and is compatible with the Spanning Tree Protocol for Ethernet bridging.

The 2590 performs protocol conversion at each end of the connection, Theranger said. For example, the device can accept asynchronous traffic at the LAN and convert it to X.25 for transport over the WAN. The traffic is converted back to asynchronous at its destination.

The 2590 can also convert Telnet to LAT, and vice versa, if TCP/IP systems need to access data on DEC hosts or if DEC terminals need to access TCP/IP systems, he said.

The 2590 is priced at \$8,995 and is available now. □

## Amex network at a glance

Countries served	140 on 5 continents
IBM NCPs on-line	56
Backup NCPs	9
Physical units on token ring	1,206
Active Token-Ring Interface	35
Couplers	
Active PU 4 links	535
Other active links	3,463
Physical units	5,322
Logical units	138,332
IBM Series/1s	47
LANs	50+
Network Equipment Technologies, Inc. IDNXs	28

NCP = Network Control Program

GRAPHIC BY SUSAN J. CHAMPEY

SOURCE: AMERICAN EXPRESS TRAVEL RELATED SERVICES COMPANY, INC., TECHNOLOGY DIVISION, PHOENIX

## New IBM FEP fits the bill for Amex

American Express TRS finds 3745 Model 310 upgrade cost-efficient route to more throughput.

By Paul Desmond  
Senior Editor

**PHOENIX** — American Express Travel Related Services Company, Inc. (TRS) is in the process of upgrading the IBM front-end processors in its worldwide network to IBM's latest model — a strategy that will increase transaction throughput without breaking the bank on new equipment costs.

The chief benefit of deploying the IBM 3745 Model 310 Communication Controllers is a performance increase that obviates the need for American Express TRS' Technology Division to add new 3745s in order to handle increased traffic volumes.

David Woodward, director of technical services development for the division, said the company's traffic volumes and projected increases indicated that the 3745 Model 210s supporting its Credit Authorization System (CAS) would have been overly taxed by increased transaction volumes during last year's holiday shopping season.

The company dedicates two 3745s, plus a hot backup, to provide access to mainframes that run CAS, which is the application that authorizes credit card purchases entered from point-of-sale terminals worldwide.

"We had a strong feeling that utilization of those two 3745 Model 210s would . . . leave us little room for error," Woodward said.

The company did not need more lines, it just needed to pump transactions through faster on existing lines, he said. That meant either installing another 3745 or upgrading the existing models.

"From a financial standpoint, an additional 3745, configured

the way we needed it, was running close to \$500,000," Woodward said. "The list price on these upgrades was around the \$40,000 mark."

### Major upgrade

Last October, the company upgraded the front ends that provide access to CAS and is now in the process of upgrading 3745s in other parts of the network to the Model 310. Eight of the planned 20 upgrades have been completed, he said.

The 3745 Model 310 can support 50% more transactions at the same processor utilization rate as the Model 210, Woodward said, which is exactly what IBM promised when it announced the product ("IBM fortifies FEPs; NET adds new router," *NW*, June 24, 1991). The 310 and the dual-processor Model 610, which is offered as an upgrade to the 3745 Model 410, both have reduced processor cycle time and increased cache memory as compared to the models they are intended to replace.

Response time is also marginally improved with the 310, although Woodward said that was not a critical factor because it was already in the two- to three-second range, which is acceptable for POS applications.

The company intends to upgrade 3745s that are currently running at 50% to 60% utilization, he said, as well as those supporting growing areas of the net.

"For the majority of 3745s that exist in our network, we definitely see this as a [way] to extend their life at what we see as an inexpensive price," Woodward said. "Come Christmas, we don't want spots in our network to have 3745s with high utilization."

(continued on page 14)

# HP FTAM wares to get U.S. GOSIP seal of approval

By Paul Desmond  
Senior Editor

PALO ALTO, Calif. — Hewlett-Packard Co. this week is expected to announce that its OSI File Transfer, Access and Management (FTAM) software has passed conformance tests for GOSIP Version 1.0, making HP the first vendor to pass all required conformance tests for OSI services.

HP had earlier passed Government Open Systems Interconnection Profile tests for OSI Transport Services and X.400.

Also on the interoperability front, Bull HN Information Systems, Inc. recently announced that its FTAM software has successfully completed interoperability tests with IBM FTAM products.

## HP tops on NIST list

HP has the only FTAM and X.400 products that are registered with the National Institute of Standards and Technology (NIST) as GOSIP-compliant, said Jean-Philippe Favreau, project leader for NIST's GOSIP testing program in the U.S. HP is one of only two vendors — along with IBM

— to have registered with NIST an OSI Transport Services product, which provides OSI transport and session-layer services.

IBM has passed conformance testing for OSI Transport Classes 0 and 4, which are connection-oriented and connectionless services, respectively, according to Favreau. HP has passed testing for Transport Class 4.

The latest HP addition to NIST's Register of Conformance Tested GOSIP Products is HP FTAM/9000, which supports access to and transfer of applications and files across a multivendor OSI network. HP FTAM/9000 includes both an interactive end-user interface and an application program interface that enables developers to

embed FTAM facilities into applications.

The software also provides multivendor file management, including file creation and deletion. Additionally, it supports file attribute modification capabilities, such as record-level access and the ability to obtain information about a file such as its creation date and ownership.

HP FTAM/9000 ranges in price from \$1,200 to \$12,600.

## Bull HN, IBM pass test

Bull HN, meanwhile, announced that its DPX/2 family of Unix computers has completed interoperability tests with IBM RISC System/6000 machines running AIX and IBM 3090 mainframes running MVS. The tests were conducted under the auspices of OSINET Corp., an association of computer and communications systems vendors and users, and the results have been formally registered with the OSINET Network Registration Service.

Bull HN tested interoperability of its FTAMX Release 2 product with IBM's OSI/Messaging and Filing/6000 V1R1.0 application running on the RS/6000 and with IBM's OSI/File Services V1R1 on the 3090. □

## New IBM FEP fits the bill for Amex

*continued from page 13*

The upgrade process involves a simple hardware change in the 3745, but also requires use of IBM's Network Control Program (NCP) Version 5.4, which is the latest release of NCP.

NCP 5.4 provides benefits of its own, Woodward said, such as support for accounting statistics that enable the company to monitor utilization of the Token-Ring Interface Couplers, which connect the 3745s to 16M bit/sec token-ring local-area networks. Similar utilization statistics are provided for the 3745's NCP Packet Switching Interface and X.25 SNA Interconnection.

In general, Woodward said the Model 310 represents the kind of enhancement his company likes to see.

"These are the things IBM needs to be doing — making relatively simple changes that provide value and extend the life of the current configuration without having to swap it out like we've done with the 3705 to 3725 and the 25 to 45," he said. □

## DEC enhances tool used to link micros

*continued from page 13*

a vast potential [user base] to tap into. It really opens up a lot more opportunity for ACMS."

ACMS is the transaction processing component of Nippon Telegraph and Telephone Corp.'s Multivendor Integration Architecture, a systems, network and software procurement specification devised by the Japanese telecommunications giant in concert with DEC, IBM, Hitachi, Ltd., Fujitsu, Ltd. and NEC Corp. Three other DEC customers have implemented Multivendor Integration Architecture — which debuted a year ago — in pilot phase, while several other large DEC users are considering adopting it, Grenham said.

Desktop ACMS is slated for a fourth-quarter release. It is priced at \$245. A software, documentation and self-paced training package costs \$495. □

# The Truth About Outsourcing.

When you first look at outsourcing, you may think it's cheaper to manage your own data

network. But be careful. Beneath the base costs of leased lines, there are many hidden costs associated with doing it yourself. Costs like employee expense, equipment maintenance fees, depreciation and rental charges, network management software and datacom staff training. Just to name a few. When you add it up, doing it yourself isn't such an inexpensive idea.

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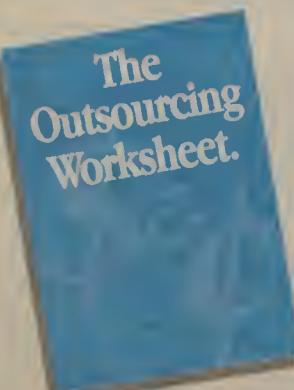
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# LOCAL NETWORKING

PC AND TERMINAL-TO-HOST LANs, GATEWAYS AND MICRO COMMUNICATIONS PRODUCTS

## Worth Noting

"I don't know if people realize that Novell now has approximately 10 million users attached to NetWare LANs and will add another million users in just six months."

Jamie Lewis  
Principal analyst  
The Burton Group  
Salt Lake City

## Netnotes

**NetWorth, Inc.** last week at the NetWorld '92 trade show in Boston unveiled two new modules for its Series 4000 line of LAN hubs.

The first is called the 10Base-T Host Module with Fiber. This module has 12 RJ-45 ports for 10Base-T connections and two connections for fiber-optic cabling. In addition to tying 10Base-T users to the hub, the module provides fiber-optic links to backbone facilities.

The second module for the Series 4000, the Smart Telco Module, comes with a cable terminated by a single 50-pin Telco connector for connection to a telephone punch-down block. This will enable customers to use existing telephone system infrastructures to link 12 10Base-T devices to a hub.

As an added feature, the Smart Telco Module also has a built-in Simple Network Management Protocol (SNMP) agent. This means the Series 4000 concentrator can be managed by any SNMP manager. The 10Base-T Host Module with Fiber will be available late March for \$2,195; the Smart Telco Module will be available at the end of this month for \$2,895.

NetWorth also introduced InstaLAN, a hardware starter kit for Novell, Inc. NetWare 10Base-T local-area nets. InstaLAN is designed for small work groups and first-time LAN buyers. The package will be available at the end of this month for \$1,750. □

## Front-end tools breathe life into host-based programs

Viewpoint unveils SQL query tool, upgraded GUI.

By Timothy O'Brien  
West Coast Bureau Chief

SAN MATEO, Calif. — Viewpoint Systems, Inc. will unveil today a major upgrade of Flashpoint, its graphically driven application development tool, in addition to a database query tool.

Designed for use with Microsoft Corp.'s Windows, Flashback 3.0 includes several new windowing enhancements that make the icon-based development environment easier to use when building client-based graphical user interfaces (GUI) that act as front ends to host applications and SQL databases.

The company also announced Accesspoint, an SQL database query tool that allows users to retrieve and manipulate data from several databases at once and combine the results into a single response.

By using client interfaces built with Flashpoint or the query tool, users can — with minimal time and investment — extend the life of existing character-based host applications and SQL databases by enabling them to support GUIs.

"With Flashpoint, and now Accesspoint, it is possible to gain the benefits that come from shifting [some of] the processing work load from the host to the desktop," said Barbara Booth, cofounder and vice-president of technology at Viewpoint.

Unlike most other tools for developing GUIs, Viewpoint's products use an intuitive point-and-click approach, which eliminates the need for programming.

In order to build a Flashpoint interface, developers follow a step-by-step process presented through a series of windows. As links between icons are selected, Flashpoint translates the choice into the actual program. With this upgrade, Flashpoint offers several new features that increase the flexibility of this visual development approach.

Flashpoint 3.0 now offers users the ability to simultaneously display and work with multiple windows, each representing data from different sources — including images for the first time.

The product automatically (continued on page 16)

## Oracle adds E-mail link to DBMS tool

By Timothy O'Brien  
West Coast Bureau Chief

BOSTON — Oracle Corp. last week announced an add-on product called Post Card for its Oracle Card front-end graphical application development environment that will enable users to build applications that can connect to leading E-mail systems.

By building Post Card runtime code that contains a messaging interface into Oracle Card applications, users can now design programs that provide desktop access to electronic mail systems and back-end Oracle database servers.

"Oracle Card applications now have access not only to Oracle and IBM database data, but also messaging and communications from popular electronic mail systems," said Marc Benioff, corporate vice-president of Oracle's New Technology Division.

Post Card provides developers using Oracle Card with an appli-

cation program interface (API) to E-mail systems, such as Oracle Mail, Lotus Development Corp.'s cc:Mail and Microsoft Corp.'s Microsoft Mail. In addition, Post Card includes an Oracle Card application that enables users of Oracle Card to read, send and manage their personal E-mail.

Since Oracle Card allows integration of graphics and images in database applications, Post Card will be able to extend this capability to E-mail, allowing users to send and retrieve images, data and text from the Oracle Card environment.

Oracle Card, which consists of a tool set that runs on both Microsoft's Windows and Apple Computer, Inc.'s Macintosh, allows development of front-end applications that use an API called Oracle Access in order to make high-level calls to back-end database servers.

Oracle Card and the associated E-mail software systems must be installed in order to run Post Card. The product costs \$299, the same price for a run-time version with eight licenses.

Post Card is expected to be available for connectivity to Oracle Mail in the third quarter and to cc:Mail and Microsoft Mail in the (continued on page 16)

## STARTEK profile

**Headquarters:** Northborough, Mass.  
**Founded:** 1985  
**Revenue:** \$20 million

### Products: Hardware

- Focus Series: Intelligent wiring hubs that support any combination of token-ring, 10Base-T and FDDI LANs to run simultaneously
- Intelligent MAUs
- Nonintelligent MAUs
- Active Hub Series for IBM's AS/400
- Stand-alone fiber and copper repeaters, media filters, adapter cards and a twisted-pair cable analyzer

### Software

SNMP network management software for Microsoft Corp. Windows 3.0 and OS/2

**Installed base:** More than 500,000 node connections

**Distribution:** Direct as well as through systems integrators and value-added resellers

MAU = Multistation access unit

GRAPHIC BY SUSAN J. CHAMPEY

SOURCE: STAR-TEK, INC., NORTHBOROUGH

## Star-Tek to explore new LAN frontiers

Company widens its LAN support, but keeps sights squarely focused on the token-ring market.

By Maureen Molloy  
Staff Writer

NORTHBOROUGH, Mass. — Star-Tek, Inc., a company that has made a name for itself in the token-ring arena, is moving into new market territory while staying true to its roots.

The hub maker began carving its niche in the local-area network industry in 1987 with products that supported token-ring LANs over unshielded twisted-pair wire. It later became the first vendor to support 16M bit/sec token ring over unshielded twisted pair, a technology that has since been blessed with such industry heavyweights as IBM and SynOptics Communications, Inc.

Star-Tek is trying to expand beyond the token-ring world. It recently announced the Focus Series line of intelligent hubs, which support any combination of token-ring, 10Base-T Ethernet and Fiber Distributed Data Interface networks.

At the same time, Star-Tek enhanced its 16M bit/sec unshielded twisted-pair offering by extending the distance supported between workstations and the hub as well as beefing up the number of nodes supported on a single token-ring LAN.

While Star-Tek has expanded its media support with Ethernet and FDDI, the token-ring market remains its primary focus, according to Peter Williams, Star-Tek's vice-president of research and development.

Williams said the company recognized its opportunity early on to provide an unshielded twisted-pair wiring solution for the IBM mainframe and mid-

range market. The company's first product was an active hub wiring concentrator that linked terminals to IBM System/36 and 38 computers over unshielded twisted pair.

In 1987, Star-Tek expanded its unshielded twisted-pair offerings with a line of token-ring hubs for use with unshielded twisted-pair cabling. The company introduced automatic, main ring fault-tolerance technology that would enable the hub to automatically isolate faulty main ring connections, thereby preventing net crashes.

Two years ago, Star-Tek became the first vendor to ship a token-ring hub capable of supporting unshielded twisted pair over 16M bit/sec.

"Star-Tek understands the IBM Token-Ring area extremely well and has come out with leading-edge features to allow users to run longer and faster cabling schemes as well as support many more nodes on the ring," said Charlie Robbins, director of communications research at Aberdeen Group, Inc., a Boston-based consultancy.

Last November, IBM and SynOptics also announced plans to jointly develop products that support 16M bit/sec token-ring LANs on unshielded twisted-pair wire. Both companies are honing technology that will support 16M bit/sec token ring over unshielded twisted pair at distances up to 100 meters between wiring closets and workstations. In addition, the companies' aim is to support at least 130 users on a LAN — half of what shielded twisted-pair (continued on page 16)

## Star-Tek to explore new LAN frontiers

*continued from page 15*

wire can support.

With the new token-ring features, Star-Tek's Focus Series hubs will support 16M bit/sec unshielded twisted pair up to 200 meters away and as many as 260 nodes on a single LAN.

The enhancements include a Distributed Recovery Intelligence chip on each token-ring module that automatically isolates and removes faulty nodes attached to the unit. Rather than rely strictly on the network management module, all the modules in the hub simultaneously search for errors, thereby allowing glitches to be identified more quickly.

Another feature is an Intelligent Jitter Cancellation chip on each module that removes accumulated jitter on the network. Unlike other vendors' schemes that only handle high-frequency jitter, Star-Tek's implementation eliminates jitter at any frequency.

To achieve better performance over unshielded twisted-pair cable of varying quality, the company has also incorporated a retiming feature on every module port. Unlike the retiming technique advocated by IBM and SynOptics, Star-Tek uses a dedicated, locked-loop chip that supports distances up to 200 meters over high-quality

unshielded twisted-pair cable and at least 100 meters over lower grade unshielded twisted-pair cable.

Users applauded the vendor's token-ring enhancements.

Gary Jackson, president of SunTel Services, Inc. in Troy, Mich., currently uses Star-Tek hubs to tie together the token-ring LANs dispersed throughout the company.

"Star-Tek is the expert at token ring, and their products are competitively priced," Jackson said. "Another unique feature is the hub's ability to support [direct attachment of] IBM AS/400 terminals in the same chassis as token-ring, Ethernet and FDDI LANs."

Victor Galvez, manager of technical ser-

vices at Michigan National Bank, concurred.

"When we began deploying LANs three years ago and made the commitment to IBM's Token-Ring topology, we evaluated numerous vendor products and found Star-Tek to be the vendor that provided the strongest token-ring solution," said Galvez. The bank is buying a number of Focus Series hubs for major sites.

The Focus Series hubs will begin shipping three versions by the end of the month. A two-slot chassis that supports two LANs is priced at \$700; the five-slot chassis supporting four LANs and a single power supply costs \$1400; and the five-slot chassis with redundant power supplies costs \$2,100. □

## Tools breathe life into host programs

*continued from page 15*

handles the integration of the data from these sources into a single desktop application.

The new version also adds "hot spots," allowing areas of panels to become mouse-sensitive regions. When the user clicks the mouse at the spot, commands are invoked that could initiate tasks, such as a 3270 session.

Pricing for a Flashpoint 3.0 development system is \$9,500. Availability is scheduled for March.

### Accesspoint

Accesspoint is a cooperative processing application for making database queries and includes a component that runs under Windows on the desktop and a systems administration module that runs on the target database server or the host. Through the GUI at the desktop, users can develop queries by selecting icons. Accesspoint generates all supporting SQL query code automatically. The application supports LU 6.2 for host connections to IBM's DB2 or Sybase, Inc.'s SQL Server, as well as Network Basic I/O System connections to local-area network-based database servers, such as Microsoft's SQL Server and Gupta Technologies, Inc.'s SQLBase.

Accesspoint is scheduled to be available at the end of March. The client module is priced at \$595, while the server module ranges in price from \$60,000 to \$80,000, depending on system configuration. □

## Oracle adds E-mail link to DBMS tool

*continued from page 15*

fourth quarter.

In a related announcement, Oracle unveiled another Oracle Card connectivity product called PalmLink, a software interface that provides compatibility between data on a Sharp Electronics Corp. Wizard palmtop computer and an Oracle Card application running in Windows or on the Macintosh. This provides a way to integrate information stored in the Wizard internal database with Oracle databases running on personal computers, local-area networks and host computers.

PalmLink requires Oracle Card for Windows or the Macintosh, as well as Sharp's Link for PC or Macintosh. The run-time version and the eight-license model cost \$299 each.

PalmLink is expected to be available in the third quarter. □

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# MANAGEMENT STRATEGIES

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## Worth Noting

"If imaging takes off, then all our network plans will be wiped out. It's like playing Russian roulette — you spin the barrel on the revolver and if imaging comes up, your network is dead."

Ron Kopitowsky  
Telecommunications director  
Metropolitan Transportation Authority of New York State  
New York

## Association Watch

The Puget Sound Chapter of the Tele-Communications Association, Inc. (TCA) plans to hold its 12th annual Telecommunications Northwest Teleconference March 11-13 at the Westin Hotel in Seattle.

The conference will include a variety of vendor exhibits and seminars, which range from tutorials on data and voice communications to fundamentals of traffic design and analysis.

The cost for the seminars and exhibit for all three days is \$100 for TCA members and \$125 for nonmembers. Daily tickets cost \$35 for TCA members and \$45 for nonmembers.

For additional information, call (206) 224-5444.

The Wall Street Telecommunications Association (WSTA) will hold an educational seminar Feb. 25 at the Whitehall Club in New York. The Networking Challenge: Native LAN Connectivity in a MAN/WAN Environment will be hosted by Metropolitan Fiber Systems, Inc. and will include discussions on new approaches to high-speed networking.

The conference is free to WSTA members; there is a \$100 registration fee for nonmembers.

For more information, call WSTA at (908) 204-0863. □

## Mgrs. should scan PCs now to prevent impending virus

Only new programs will defeat Michelangelo.

By Salvatore Salamone  
Features Writer

MECHANICSBURG, Pa. — There is a menace lurking in personal computers across the country that will emerge March 6, when a rapidly spreading virus named Michelangelo is set to be released.

The virus, which will overwrite data stored on infected IBM PC hard disk drives, can be identified and removed through scanning. However, that approach is not as simple or effective as it sounds because Michelangelo is relatively new.

Virus scanning programs that have not been upgraded in the past six months will not detect Michelangelo. The virus was first discovered last April, and researchers did not have a usable sample to analyze until two months later. It was not until several months later that scanning software vendors obtained a signature of the virus for their detection programs.

Therefore, relying on older scanner programs might give a false sense of security. For in-

stance, Michelangelo was shipped on 500 Leading Edge Products, Inc. PCs between Dec. 10 and 27 of last year, even though the company conducted a presale virus search. The virus was also found on more than 600 Da Vinci Systems Corp. eMAIL 2.0 demonstration disks shipped to the company's resellers at the end of January.

"Most of the latest versions of virus scanner software programs can detect Michelangelo," said Charles Rutstein, author of *The Executive Guide to Computer Viruses*, published by the National Computer Security Association (NCSA). "If you do not know whether your scanner will detect Michelangelo, call the scanner software company and ask."

Michelangelo is spread by sharing floppy disks. It is a boot-sector virus that becomes memory resident when a PC is booted with an infected floppy disk. Michelangelo will load even if the boot is unsuccessful, which can occur if the infected disk is not a system disk.

(continued on page 21)

### BOOK REVIEW

BY MAUREEN MOLLOY

## Guide provides insight into LAN internetworks

*Mastering Internetworking: Self-Paced Learning Series*, V.C. Marney-Petix (Fremont, Calif.: Numidia Press, 1992), \$27.95.

The foundation network of the 1990s will be the local-area network internet, which may coexist with users' existing IBM Systems Network Architecture nets. Network managers must prepare for the emergence of this environment and understand how to apply this relatively nascent technology to the organization's business objectives.

*Mastering Internetworking* — which grew out of a training course the author, V.C. Marney-Petix, periodically holds for net managers — provides a clear description of the fundamental components of internetworking technology by taking the reader on a tour of local-area, campus and wide-area internets and their accompanying hardware and software components.

The author approaches the subject from a beginner's perspective and assumes only that the reader is proficient in basic LAN technology. Chapter 1 brings the reader quickly up to speed on internetworking terminology by defining basic internetwork devices, such as repeaters, bridges, routers and gateways.

Chapter 2 provides comprehensive coverage of repeaters and bridges, including bridging algorithms and standards such as the Spanning Tree Algorithm and the source routing protocol, and outlines the type of applications where bridges are most useful.

Chapter 3 focuses on routers and gateways while giving the

(continued on page 21)



User Advisory Panel members (l. to r.) Michael Kilbane, Ron Kopitowsky and Len Evenchik discuss network issues at ComNet.

## Users debate open systems, public nets

NW User Advisory Panel discusses issues that are facing net managers of large organizations.

By Wayne Eckerson  
Senior Editor



Members of the *Network World* User Advisory Panel met at ComNet for a wide-ranging discussion of issues affecting network managers at large organizations.

The managers discussed obstacles affecting the growth of open systems, the trade-offs of migrating voice and data traffic from private to public nets and the prospects for frame relay.

The participants included Len Evenchik, director of communications for the commonwealth of Massachusetts; Bud Huber, senior consultant at Hughes Aircraft Co. and a founding member of the User Alliance for Open Systems; Michael Kilbane, manager of networking technologies at Diamond Shamrock R&M, Inc. and president of the International Communications Association; Ron Kopitowsky, telecommunications director at the Metropolitan Transportation Authority of New York State and past president of the Communications Managers Association; and Chuck Papageorgiou, network administrator for United Parcel Service, Inc.

Has the open systems movement stalled or is it gearing up for significant growth?

Huber: The open systems movement hasn't stalled, but a lot of air has been taken out of it in the past half year. I'd love to know the reasons why.

Evenchik: I think the boat

has changed direction. People are looking to implement non-vendor-specific solutions rather than standards such as OSI protocols. For example, TCP/IP is an open, non-vendor-specific protocol, and it has lots of wind in its sails at this point.

Also, people aren't replacing systems wholesale. They add one piece at a time to existing systems, which may already be proprietary. This often makes it impractical to implement open systems.

Kopitowsky: The problem is that as technology changes, standards fight it. Technology moves so fast [that] standards lag behind. While groups are meeting to hash out standards for wireless LANs, we are walking [the show floor] looking at wireless products.

Huber: I don't think anybody would argue that the standards process is busted. But what they haven't been able to do is come up with a way to fix it.

The open systems movement shifted away from an emphasis on standards to vendor consortia, which combine technologies into so-called standard platforms. Is it dangerous to have vendors deciding what will be the standard platforms of the future?

Evenchik: Creating a vendor-specific standard and throwing it out to the community is different than creating a vendor standard and never opening it up, which is what used to happen.

Kopitowsky: Years ago, two or three vendors got together and kept [their platform] proprietary.

(continued on page 20)



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## Users debate open systems, public nets

continued from page 17

Today, they're banding together and opening up a full range of products. They know that if they went through the standards process, they wouldn't be able to get their products out for five years.

**Huber:** I submit that's not even all that bad.

**Evenchik:** I agree. However, I would value more user input in the forums. Many user companies, even large ones, find it expensive to join them.

**Vendors complain that users aren't buying their open systems products, and users claim that vendors don't make products worth buying. What's at the root of this logjam?**

**Evenchik:** Vendors will bring in seven people to make a presentation on a proprietary product but only have one person to market their OSI product, and that person is rarely available. Vendors aren't willing to allocate the staff resources because they believe they are going to lose with open systems.

**Papageorgiou:** When we evaluate products, we ask what we want, what we need and what we can live with. We want a system with all the bells and whistles and is standard, but what I need is a system that does all these things and I really don't care if it's not standard.

**Would it help if vendors provided more robust open systems products?**

**Kopitowsky:** There are often no standards specifying the functionality you want. Although vendors have standards-based products, the only products they have that provide the necessary functionality are proprietary.

**Kilbane:** If you only make an open system, your product will turn into a commodity. There is a fear there. Many vendors want to provide a suite of proprietary products that are tied to their open systems products.

**Papageorgiou:** Also, by design, standards have a lot of overhead to support all the bells and whistles. Why are people going to TCP/IP? Because it has a lot less overhead than OSI and it costs less.

**Evenchik:** What would help users is an extremely detailed cost analysis that shows how implementing open systems will save users dollars over the life cycle of an application.

It's difficult to make a business case for open systems when there are other solutions that are as functional.

**Do most users have a strategic plan in place for building a more interoperable network environment?**

**Kopitowsky:** I think it is there mentally. It may not be documented.

**Kilbane:** We're cautious about not building ourselves into a corner [with proprietary products]. We check to make sure vendors have a commitment to open systems and will build future versions of their products to standards. None of us want to go back to a single-vendor environment.

**Kopitowsky:** For example, every piece of data communications equipment I bought in the last 10 years had a clause in the contract somewhere that the product would eventually be [IBM] NetView-compatible.

That was the direction. You didn't know when [it would occur] or how many dollars

it would take to make that happen. This was your little ray of sunshine because vendors would say they could make it happen.

**Will companies continue to move traffic onto public nets? And what will be the role of the private network in five or 10 years?**

**Papageorgiou:** What it boils down to is cost per minute or cost per transaction. Right now, there is room for private networks for both voice and data. Unless vendors come up with a pricing scheme that makes public networks 100% cost-effective, then we aren't going to lose private networks.

**Kopitowsky:** You are making assump-

tions that the public network will work. The public voice network works, but that is not the case with data. The public data networks have always had problems. This forced people to build private networks.

**Evenchik:** I see an evolution. Users will migrate pieces of their private network to the public network as it becomes more cost-effective from a life cycle perspective.

Also, new applications will be first implemented in the private [network] and then migrated to the public net.

**Kilbane:** By using the public network, we are, in effect, outsourcing. It used to require lots of staff to support a 1,000-site private voice network. Now, we can add and delete locations dynamically, we get

economies of scale, and we are not loading up on a lot of staff.

**Kopitowsky:** Voice is easier. The technology has been in place a lot longer and is a lot more stable. Standards have always been there. On the data side, there is not a vendor out there who can pull it all together and make us comfortable because data is not a utility.

**Papageorgiou:** But is it going to get there?

**Kopitowsky:** Yes, it will. But where will we be when it does get there? Hopefully, we'll be four blocks down the road dealing with new complex business or technology issues. But will there be a vendor out there to take care of it all? Right now, you would be wasting your time outsourcing

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data to a vendor.

**Do you think a majority of users will move traffic onto frame relay services?**

**Kopitowsky:** Frame relay will be a winner. Users with high volumes of bursty LAN data will be able to plug in a few boards and make it work.

**Evenchik:** Frame relay will be one more tool in our bag of tricks to solve our network needs. But I can't identify the product it will replace.

**Kopitowsky:** I don't think it is going to replace a product. That's why I think it will work.

Frame relay is being specifically built to support LAN interconnection traffic. It's

only alternative is the private network.

**Evenchik:** But frame relay can be a public network service or can be implemented on a private network.

**Kopitowsky:** If a public frame relay network is cost-effective, that's the way we'll go. But what usually happens is that the public service is not there or it's priced too high. That's when you start looking at your existing T-1 backbones.

Frame relay will become a standard off-the-shelf product. Vendors will give users a couple of cards, and they will manage the network.

**Papageorgiou:** The vendor who gets to the market first with plug-and-play frame relay will make our life a lot easier and ease our management headaches. □

## Managers scan PCs to prevent virus

*continued from page 17*

Many viruses spread only when a program is run. However, once Michelangelo is resident, it will infect the boot sector of other floppy disks as they are used. That means Michelangelo will infect a floppy disk on any read/write to the disk, which is a very efficient means of spreading the virus, according to Rutstein.

On March 6, the virus will become active, rewriting the hard drives of infected machines.

There is already evidence that the virus is starting to infect machines at a rapid pace. "We average about a dozen calls a

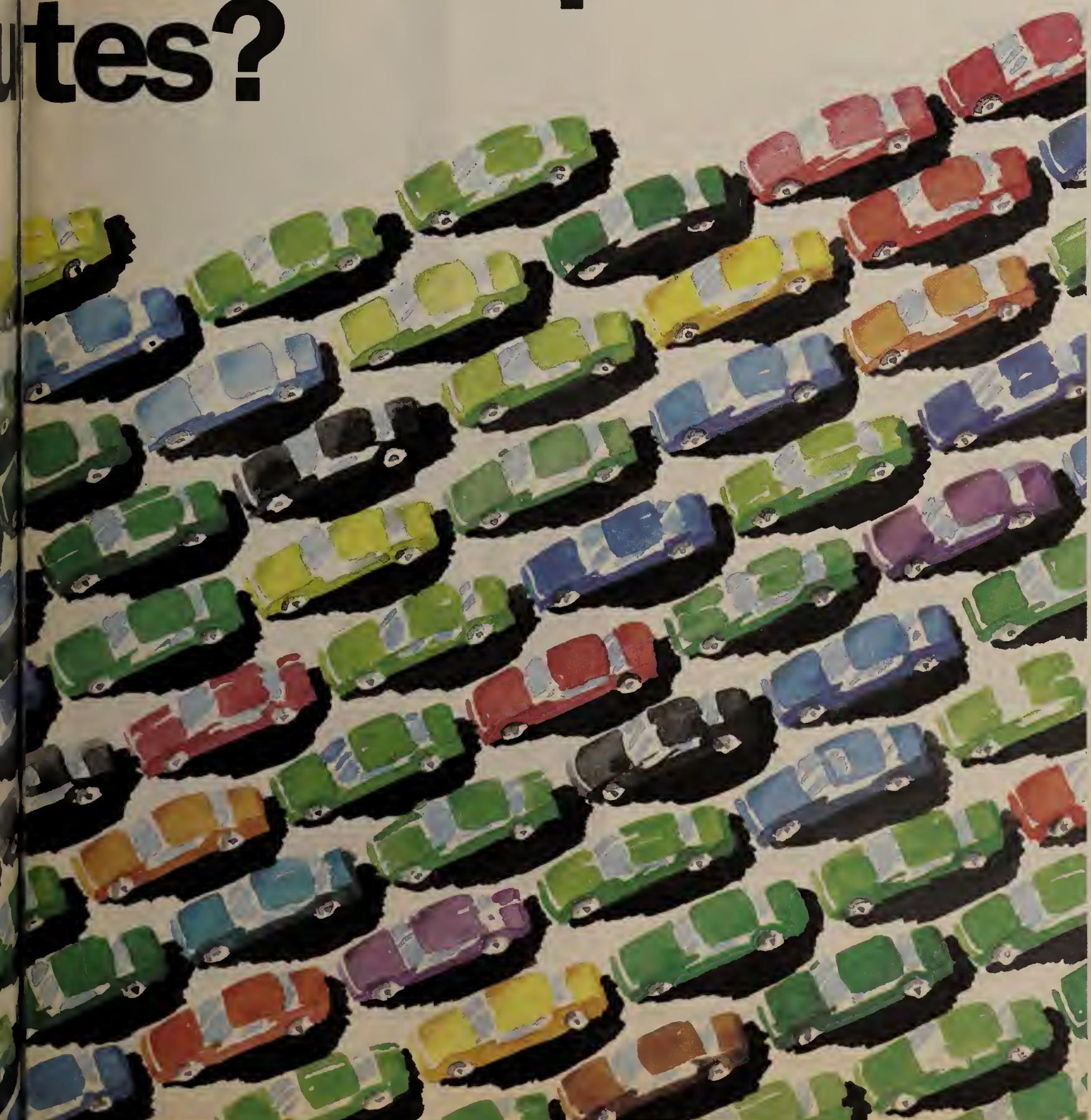
day with questions about Michelangelo," said Robert Bales, NCSA's executive director. The calls are from users who were lucky enough to find it before it kicked in.

To head off potential problems, net managers should start updating their scanner software and checking their PCs now, Rutstein says.

Several popular shareware scanner products, all of which can detect Michelangelo, can be downloaded by dialing the NCSA's bulletin board service at (202) 364-1304. In addition, *The Executive Guide to Computer Viruses* can be purchased by calling the NCSA at (717) 258-1816 or sending \$24.95 (\$14.95 for NCSA members) to: NCSA, 227 W. Main St., Mechanicsburg, Pa. 17055. □

**National Car Rental**

# Customer's briefcase before his plane takes?



## Guide offers help for LAN internetworks

*continued from page 17*

reader sufficient grounding on a number of routing issues, including the use of multiprotocol routing and hybrid bridge/routers.

It also touches upon network layer and application layer gateways and the applications for which they are best suited.

Beginning in Chapter 4, the focus shifts to the transport methods used in long-distance LAN-to-LAN and LAN-to-WAN internetworking, including packet- and circuit-switched technology.

The section also discusses linking LANs

**A**t the end of each chapter, the author presents a test that enables readers to gauge their level of understanding.



into T-1 backbones as well as emerging wide-area network services, such as frame relay, Switched Multimegabit Data Service and Synchronous Optical Network.

The author also devotes a chapter to management issues relating to a corporate internet, outlining national and international management standards, as well as the most common internet glitches and how to manage them.

At the end of each chapter, the author presents a particularly useful review test that enables readers to gauge their level of understanding. Readers are discouraged from tackling the next chapter until they can successfully complete the test.

In addition, Marney-Petix uses the seven-layer Open Systems Interconnection model as an anchor for understanding how internetwork elements fit together. Diagrams are used judiciously to further illustrate technically intricate concepts such as application gateways.

Overall, *Mastering Internetworking* is an exceptionally good study guide that will enable the earnest student to firmly grasp the complexities of LAN internetworking.

Upon completion of this self-paced series, the network manager should be able to cut through vendor hoopla and cull the most salient information necessary to successfully build a corporate internetwork. □



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# GLOBAL NETWORKS

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## Worth Noting

Users have until March 1 to enter the International Communications Association's "International Communicator of the Year" competition. This award will recognize one user for significant global networking achievements. The competition is also sponsored by World Communications, Inc.

## World News

AT&T last week announced a series of pricing changes that should cut the costs of international calls.

The first is a new pricing plan, called International Business Alternative (IBA), which is designed to reduce the cost of short-duration international calls.

IBA carries a flat per-minute rate for international direct-dial calls, rather than different charges for the first minute and subsequent minutes.

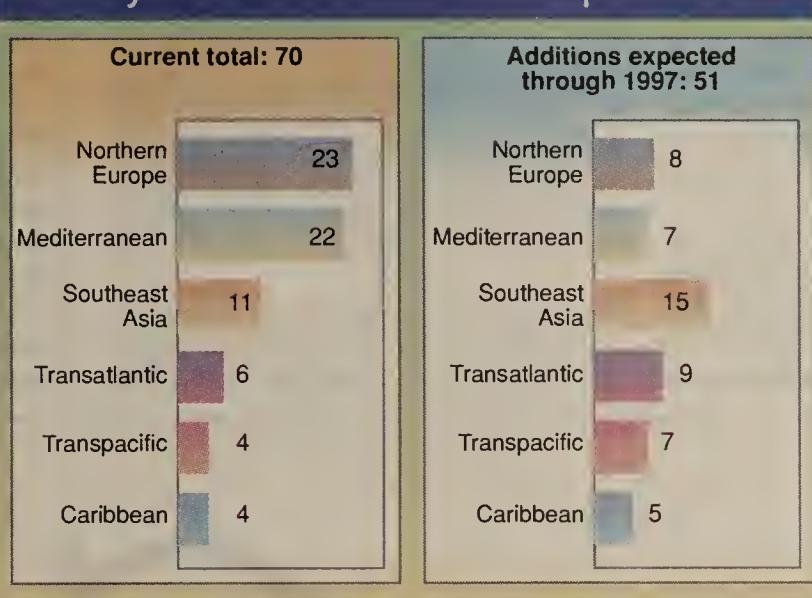
Since the IBA rate is significantly less than the rate currently charged for the first minute of a call, the plan saves users an average of 30% for calls lasting only a minute, AT&T said.

For example, a typical call to Japan costs \$3.05 for the first minute and \$1.25 for each additional minute. IBA's flat per-minute rate to Japan is only \$1.69, so a one-minute call would cost 45% less.

As the call duration increases, however, the savings gradually diminish. The break-even point is at about four minutes, AT&T said.

The carrier also announced a new discount schedule for its International Pro WATS Service that is designed to let small businesses qualify for more volume discounts. The new discounts start at 2% for users with monthly charges of \$125 to \$200. □

### A tally of international fiber-optic cables



## Group formed to convey users' needs to int'l carriers

TelCOM members include nine users, 16 carriers.

By Barton Crockett  
Senior Editor

NEW YORK — Network managers recently conducted the first meeting of a new user group aimed at making international carriers more responsive to the needs of multinational companies.

The Telecommunications Council of Multinational Companies, Inc. (TelCOM) was formed to help users by keeping international carriers better apprised of user needs.

Nine users and 16 carriers attended TelCOM's inaugural meeting here. The users included network managers from Caterpillar, Inc., Chiquita Brands International, The Coca Cola Co., Digital Equipment Corp., Exxon Corp. and J.P. Morgan & Company, Inc.

Representatives from AT&T, MCI Communications Corp. and US Sprint Communications Co. also attended the meeting, along with U.S.-based employees of Belgium's Regie des Télégraphes et Téléphones, Cable & Wireless PLC, Deutsche Bundespost Telekom, France Telecom, the Netherlands PTT and the Swiss PTT.

### Filling in the gap

TelCOM intends to fill a gap in existing user groups by focusing solely on business issues relating to the design and operation of global networks rather than on regulatory or technical concerns.

Users that attended the first TelCOM meeting said no other user group currently focuses on business issues surrounding global networks. For instance, the International Communications Association (ICA) seems interested mostly in regulatory policies, according to TelCOM members.

They added that the International Telecommunications Users Group (INTUG) in London is primarily interested in influencing standards established by the European Community and the Consultative Committee on International Telephony and Telegraphy.

INTUG also has a reputation for combative relationships with carriers that TelCOM members said they want to avoid.

"We want to be independent of INTUG so we don't carry all that excess baggage," said a network manager participating in the TelCOM meeting who requested anonymity.

### Big need

Steve Kruy, telecommunications manager at Data General Corp. in Westborough, Mass., is spearheading development of TelCOM. He and other network managers said TelCOM could play a key role in helping carriers determine users' needs because international carriers still require a lot of education.

One of the participants, for example, said most international carriers are pushing virtual networks as a replacement for international direct-dial telephone services and pricing them at a discount relative to the direct-dial services.

In reality, most multinational companies want to use international virtual network services to move voice traffic off private networks. But international virtual network services cost 70% more than routing compressed voice over international private nets.

According to the network manager, most carriers do not re-

(continued on page 24)

## Gillette hands int'l X.25 traffic to BT unit

Dissatisfied with poor quality of foreign carriers' services, user jumps to BT North America net.

By Barton Crockett  
Senior Editor

BOSTON — Frustrated with the poor quality of public packet-switched services from carriers overseas, The Gillette Co. last week announced plans to migrate its international X.25 traffic to BT North America, Inc.'s global packet network.

The consumer products company, based here, is betting that BT North America will provide better service and be more responsive than foreign public data network (PDN) service providers that currently offer public packet-switched services to Gillette offices in about 180 countries.

Additionally, Gillette expects to cut its international network service bill by nearly a third by using BT North America's packet-switched services instead of the more expensive PDN services from local carriers.

"We needed faster throughput and a network that gave us more flexibility," said Richard Crane, systems operations and telecommunications director at Gillette. "That's why we decided to use BT [North America] as our global network carrier."

### Slow throughput

Gillette currently uses X.25-based PDN services from foreign carriers to route electronic mail and financial, manufacturing and sales data between company offices worldwide, Crane said. Typically, Gillette uses dedicated 4.8K or 9.6Kbit/sec links to shuttle data from Digital Equipment Corp. and IBM minicomputers on its premises to the nearest PDN node.

Data then flows over the PDN and through public X.75 gateways to a PDN in the terminating country. That PDN then forwards data to computers in a local Gillette office.

In some cases, Crane said, the X.75 gateways reduce throughput by 75%, cutting the throughput of packet-switched services that are supposed to run at 9.6K to 2.4K bit/sec.

These throughput reductions are often an unavoidable consequence of X.75 gateways that are designed to provide only a bare bones interconnection between different packet networks. But most PDNs must rely on X.75 gateways to send data abroad because they do not operate nodes

outside their home country.

BT North America, by contrast, operates nodes in dozens of countries. This minimizes the number of times the carrier must route traffic through X.75 gateways to support communications to a foreign country.

Where possible, Gillette plans to take advantage of this by sending traffic from local offices over dedicated 9.6K bit/sec local access lines to the nearest node on BT North America's network.

In a written statement, Gillette said that throughput can increase by 300% when the company avoids using X.75 gateways from PDNs and instead routes data between company offices using only BT North America's public packet net.

In most of the countries where BT North America does not have a node, Gillette plans to use the carrier as its contracting agent to obtain the PDN services needed to route data between Gillette offices.

“We needed faster throughput and a network that gave us more flexibility.”



BT North America will present Gillette with a single bill for its services as well as those from most PDNs. This will minimize the number of network service bills Gillette receives from foreign carriers.

By streamlining the number of service providers with which it contracts, Gillette expects to be able to focus more on strategic business issues.

"My corporate telecom staff consists of only eight people for data and voice networking," Crane said. "I think you can quickly understand why we would want to take advantage of the opportunity to manage one vendor instead of many."

Gillette began using BT North America's public packet-switched services on a pilot basis seven months ago at company offices in Belgium, Canada, Denmark, (continued on page 24)

## Turning the spotlight on hot net firms

continued from page 10

need to worry about things like remote procedure calls and communications stacks because DOMS hides all of that."

HyperDesk has already lined up several third-party software firms to build applications using DOMS and expects that end-user products will become available as early as this summer.

Beyond launching the product in March, the company is focusing on porting DOMS to more hardware platforms and adding more functionality. "This is only the beginning," Osher said.

— Joanne Cummings

## Group formed to convey users' needs

continued from page 23

alize this, and many carriers were surprised to hear that claim at the TelCOM meeting.

According to Kruy, carriers and users still need to work better as business partners, rather than maintaining an adversarial relationship.

Global virtual network services and business partnerships were the main topics discussed at the meeting.

Kruy said he expects TelCOM will eventually have about 20 user members, including network managers from companies based outside the U.S. TelCOM will be incorporated in Delaware in about a month.

A second meeting will be held during the ICA conference and exhibition this spring in Atlanta. Kruy said users should contact him if they are interested in joining. He noted that vendors will not be accepted as members. □

## Gillette hands X.25 traffic to BT unit

continued from page 23

France, Germany, the Netherlands, the U.K. and the U.S. Gillette plans to begin using the carrier's public packet services in 32 offices by year end, according to Crane. Also, Gillette plans to begin using BT North America as a service provider or contracting agent in about 180 countries within two to four years.

In 1993, Gillette will consider using BT North America's international public frame relay service to interconnect local-area networks in company offices worldwide, Crane said.

### Making a decision

This year, he added, Gillette is evaluating whether to replace its domestic private network — based on 9.6K bit/sec private lines linking company offices around the country — with public packet-switched services.

The company considered building an international private-line network instead of using services from BT North America. But Crane explained that the international private net would have taken too long to install and would have been difficult to reconfigure.

Gillette can cut over and reconfigure public packet services from BT North America relatively quickly.

"We want to be able to react to Gillette's changing business needs without impeding progress," Crane said. □

### Reach Software

Reach Software Corp. was established by Anand Jagannathan, one of the founders of LAN vendor Banyan Systems, Inc., to provide a new category of work flow products that take advantage of LAN technology in order to organize, route and integrate data for groups of users.

Reach, officially announced last March, has released two enhanced electronic mail products, but the company's first true work flow product, WorkMAN, should be available this March.

Last June, Reach released its first product, MailMAN for Banyan VINES. MailMAN for Banyan VINES added a Microsoft Windows graphical user interface (GUI) to Banyan's mail system, which allows users

to open and pass files to other applications.

Users can also view, edit, print or attach

*Reach* —

Based: Sunnyvale, Calif.

Founded: 1988

Primary business: Electronic mail-enabled work flow application software for PC LANs

files using the product.

Last September, Reach released a similar Windows-based product that comes

bundled with Novell's Message Handling Service (MHS). The firm said it now has about 10,000 MailMAN for Banyan VINES users.

Two months later, Reach announced WorkMAN, a work flow management product that allows users to create electronic forms and define routing instructions and other automated processes for each form.

The WorkMAN management tool, which works with VINES or MHS, can perform tasks such as checking expense reports for baseline dollar amounts in order to automatically transmit them to assigned personnel for review.

WorkMAN will not be available until the end of March, but Peter Kastner, an analyst at Aberdeen Group, Inc., said he previewed

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WorkMAN and was impressed.

Firms want to take advantage of the increasing number of installed personal computers, LANs and E-mail backbones to reduce paper flow. "The result is a need for work flow management products, which Reach has," he said.

— Ellen Messmer

#### Racotek

Racotek, Inc., a start-up firm that was launched in an Iowa kindergarten room-turned-office a few years back, is looking to finish at the top of its class in the emerging mobile data communications market.

The Minneapolis-based firm is rolling out its mobile data and voice communications service on top of existing voice radio

services, a strategy that will make its offering ubiquitous almost immediately.

Racotek's service, dubbed RacoNet, is

## RACOTEK

Based: Minneapolis

Founded: 1988

Primary business: Mobile data network service, application software and wireless net equipment

designed to help companies tie mobile workers into corporate networks. The 4.8K bit/sec service will be initially avail-

able in metropolitan areas and later extended to larger regions. The company began offering services last year in Minneapolis, Denver and Des Moines, Iowa. The company plans to include customers in other cities this year.

RacoNet is based on trunked radio, a technology that lets users share a group of radio channels, typically for two-way voice conversations. Racotek recently teamed up with Motorola, Inc., the leading supplier of trunked radio service, to comarket wireless voice and data services and jointly develop products. It plans to announce a similar agreement with Fleet Call, Inc., Motorola's largest competitor in the Specialized Mobile Radio operator field.

As part of its service, Racotek provides

software for Intel Corp. 80386-based PCs that enable it to act as a communications server linking mobile data units to host-based applications, such as package tracking and E-mail. Racotek provides a radio data modem for the host and mobile sites as well as mobile terminals.

Because the company has designed RacoNet to run on top of existing radio services, it has more time and resources to spend on developing software and hardware products for bolstering its service offerings, said Larry Sanders, Racotek's vice-president of marketing.

According to James Mathis, director of operations services at NW Transport Services, Inc., a trucking company in Commerce City, Colo., when RacoNet was used in conjunction with a computerized dispatch system, communications between dispatchers and truck drivers at his company was greatly improved.

One benefit is that truck drivers can receive information automatically on a terminal, rather than pulling off to the side of the road and taking notes while listening to instructions over a radio, he said.

— Bob Brown

#### Lexcel

Lexcel, a start-up formed by Micro Technology, Inc., released its first product last August — an SNMP-based net management system for monitoring and managing LANs, bridges, routers and other equipment.

## LEXCEL

Based: Fullerton, Calif.

Founded: 1991

Primary business: Network management software products

Lexcel's Lance + Network Manager is a vendor-neutral management system based on an SQL database and designed to support standard SNMP Management Information Bases (MIB) as well as vendor-specific MIB extensions.

Lance + runs on Sun or Digital Equipment Corp. workstations and is equipped with a GUI that lets users open windows into more than 50 vendor-specific SNMP implementations, such as those from Syn-Optics and Cabletron Systems, Inc.

This private MIB support sets Lance + apart from other net management systems, according to Charlie Robbins, director of communications research at Aberdeen Group. "The concept is to be able to support anyone's agent," he said.

Lance + is also the first network management system to support all nine functions of RMON MIB, developed by the Internet Engineering Task Force, he added.

RMON is designed to enable net administrators to monitor LAN traffic instead of just devices on the LAN, as is provided with SNMP. RMON functions include monitoring of events, packet capture, filters, alarms and statistics. Although RMON MIB has not been finalized as an Internet standard, Robbins said Lance + will show that the concept is viable.

Privately held Lexcel has not released specific figures on earnings, but it recently stated that it had grossed \$2 million in revenue last year and projects sales of \$7 million for its fiscal year ending in March. — Ellen Messmer

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# PRODUCTS & SERVICES

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## First Look

### Hughes upgrades Monet net management system

**Hughes LAN Systems, Inc.** recently announced it has enhanced its SNMP-based network management system.

In addition to managing Simple Network Management Protocol devices, its Monet management system can now control the company's LocalNet 2000 line of proprietary terminal servers.

**Monet 4.1** is software that runs on a Sun Microsystems, Inc. SPARCstation with OS Version 4.1.1. It enables users to manage both LocalNet 2000s and SNMP devices from the same console. Previously, LocalNet 2000 users required a separate configuration management module to manage these devices using Monet.

Monet 4.1 also features a new teletypewriter terminal communications interface. This gives remote users access to Monet via a standard modem and terminal.

Monet 4.1 costs \$14,950. Users of Monet 4.0 can upgrade to 4.1 for \$3,500. Customers that hold a Hughes LAN Systems software maintenance contract receive the upgrade at no cost.

For more information, contact Hughes LAN Systems at (415) 966-7460.

### VideoTelecom announces new low-end system

**VideoTelecom Corp.** recently introduced a new low-end videoconferencing system with an entry-level price of \$33,500.

**VisionPlus** features a color monitor and video coder/decoder that supports both switched and dedicated links at speeds ranging from 56K to 384K bit/sec.

VisionPlus supplements the VideoTelecom line of Benchmark videoconferencing systems, which support computer graphics, come with a personal computer and have an entry-level price of \$67,000.

The company said it plans to begin supporting the international Px64 standards for linking different vendor's videoconferencing systems this month.

For more information, call VideoTelecom at (512) 834-2700.

## Hitachi rolls out low-cost video devices

By Joanne Cummings  
Staff Writer

ATLANTA — Hitachi America, Ltd. recently unveiled two small, low-cost, portable videoconferencing systems that enable users to transmit voice, video, data and facsimile information simultaneously over an ISDN or switched 56K bit/sec telephone line.

The CA-200 and the DP-200 are the smallest self-contained videoconferencing systems on the market, according to Hitachi. The CA-200 is about the size of a standard video cassette recorder and weighs just 13 pounds. The DP-200 is the size of a computer terminal and weighs 35 pounds.

Hitachi said the products, which are designed for point-to-point videoconferences, bridge the gap between expensive videoconferencing systems that require special rooms and lighting and videophone systems that display only a few frames per second on small screens.

The Hitachi systems can transmit between four and 15 frames per second, depending on the amount of motion in the video. By comparison, a typical videophone transmits between two and three frames per second, said David Foote, product manager at Hitachi. The Hitachi systems also provide resolution of up to 352

by 288 pixels, whereas typical videophones offer just 128- by 112-pixel resolution.

Foote said the video quality of the new systems is slightly less than that of videoconferencing systems from PictureTel Corp., for example, but the Hitachi systems are portable and cost less. A low-end PictureTel system costs from \$20,000 to \$25,000, he said, whereas Hitachi's CA-200 is priced at \$13,900, and the DP-200 costs \$14,900.

The CA-200 includes a wide-angle color video camera, audio connections for four microphones, a CCITT H.261-compliant video coder/decoder, and an audio/video controller. It also has an RS-232 interface for attaching a personal computer and a standard telephone interface for connecting a Group III fax machine.

The CA-200 requires a standard television monitor, which the user must supply separately, Foote said. The DP-200, which offers the same features as the CA-200, includes a built-in 11-in. color monitor.

To set up a videoconferencing session, users attach the television monitor, connect the Hitachi system to the telephone network and place a call.

Both the CA-200 and the DP-200 require use of either Basic Rate Interface Integrated Services Digital Network or switched 56K bit/sec digital phone lines.

The two systems are scheduled for availability in the second quarter of this year.

For more information, contact Hitachi at (404) 446-8820.

## Firm's RISC-based laser printer supports four LANs

MOBILE, Ala. — QMS, Inc. recently unveiled a laser printer that can simultaneously support users on four local-area networks.

The QMS-PS 1700 is a Reduced Instruction Set Computer (RISC)-based laser printer that comes with standard support for one RS-232 serial port and one parallel port connection to LAN servers as well as an interface to Apple Computer, Inc. networks.

Users can also add an optional LAN interface to either an Ethernet or token-ring LAN.

The printer's standard 8M bytes of memory, expandable to 32M bytes, accepts data from all four network interfaces and selects the appropriate printer language — either PostScript, HP PCL, HP-GL or LN03 Plus. Each interface has a 16K-byte input buffer, enabling it to receive print

jobs, while one of the interfaces has command of the printer.

The Ethernet card comes with drivers supporting Novell, Inc.'s NetWare, the Transmission Control Protocol/Internet Protocol, Digital Equipment Corp.'s DECnet or Apple's EtherTalk protocols. The token-ring interface supports NetWare.

### Fast printing

The QMS-PS 1700 prints up to 17 pages per minute and includes a 25-MHz Intel Corp. 80960CA RISC processor, which enables it to print two to five times faster than traditional PostScript printers.

Available now, the printer is priced at \$7,995. The Ethernet and token-ring interfaces range in price from \$995 to \$1,995.

For more information, contact QMS at (205) 639-4474.

## Enhanced document mgmt. tools to debut

SoftSolutions, PC DOCS ready to release new versions of their LAN-based software packages.

By Joanne Cummings  
Staff Writer

BOSTON — SoftSolutions Technology Corp. and PC DOCS, Inc. this week are expected to release new versions of their respective local-area network-based document management software.

Both DOS-based offerings will feature increased security, and the two vendors are expected to pledge support for Microsoft Corp.'s Windows in the second quarter of this year.

SoftSolutions' enhanced package will feature multiprotocol support and a mode for storing copies of frequently used documents to a laptop's hard disk for use when disconnected from the network.

PC DOCS will enhance its offering with support for multidocument editing as well as a background search and print mode.

Like the previous versions, the SoftSolutions and PC DOCS offerings consist of software that resides on both a network server and a personal computer. The packages track documents created and stored on a net and enable users to quickly search and retrieve documents based on a document profile, which contains criteria such as document name, creator, subject and date.

SoftSolutions for DOS Version 3.0 now enables users to search for and retrieve documents on networks running a variety of protocols, including Novell, Inc.'s Internetwork Packet Exchange/Sequenced Packet Exchange (IPX/SPX), Digital Equipment Corp.'s DECnet and the Transmission Control Protocol/Internet Protocol.

This enables a Novell NetWare user, for instance, to locate and access documents on a TCP/IP network.

Previously, users could only perform IPX-to-IPX or TCP/IP-to-TCP/IP document transfers. Within the next year, the software will also be able to support for Banyan Systems, Inc.'s VINES, according to Alvin Tedjamulia, vice-president of technology at SoftSolutions.

PC DOCS' new offering, PC Document Organization and Control System (DOCS) Version 4.1, supports only Novell's IPX/SPX — as does the previous version — but a version due in the third quarter will provide multiprotocol support, said Mike Safar,

product manager at PC DOCS.

SoftSolutions for DOS Version 3.0 also offers for the first time a Portable Mode feature that enables users to disconnect a workstation or portable computer from the network and still use locally stored copies of their most frequently used documents. Each time network-attached users work with a document, a copy of the document and its profile are automatically placed in a directory in the laptop's hard drive.

The SoftSolutions software also offers a document reconciling feature that synchronizes changes and additions to the server's documents and informs the user of version control problems once the computer links back with the network.

PC DOCS supports copying of documents, not profiles, to the PC's hard drive, but the feature is used mainly to keep the frequently used documents local and reduce the amount of traffic across the network. The vendor will be adding a feature similar to SoftSolutions' Portable Mode in the third quarter.

### Editing features

PC DOCS Version 4.1 now supports multidocument editing, enabling users to retrieve two documents and work on them simultaneously. Previously, users could only work on one document at a time.

SoftSolutions' new version, on the other hand, supports the editing of compound documents, in which a word processing document has been linked with a spreadsheet, for example, but does not support multidocument editing. The software will lock both files in the compound document, even though only one may be in use.

In addition, PC DOCS 4.1 lets users search for and print a document in background mode while they are editing another document. SoftSolutions does not yet offer this feature.

Both products will be available this month. SoftSolutions for DOS 3.0 is priced at \$495 per server and \$295 per workstation. PC DOCS 4.1 is priced at \$295 per workstation, and the server portion is free.

For more information, call SoftSolutions at (801) 226-6000 or PC DOCS at (904) 942-3627.

# OPINIONS

## APPLICATIONS

BY CRAIG RODEMAKER

# Could ISDN be the PC revolution of the 90s?

While attending a recent seminar, I was struck with the memory of a conversation I had with an academic friend about 10 years ago. Despite my arguments, he just could not imagine any way that computers would — or even could — affect his life in the near future.

Of course, things haven't turned out as he had expected. Microprocessors have become a part of everyone's daily life, whether or not they fully realize it. And as we all now know, the personal computer has become an essential tool in the workplace. Most experts agree that the development of spreadsheet software provided the catalyst for the widespread introduction of PCs into the office.

Could it be that with Integrated Services Digital Network, we are still in a similar spreadsheet stage? As with the early PC, many of us intuitively sense that we have a powerful tool at hand with ISDN, but we are still casting about for applications that make economic sense. (In fact, I've heard it said that the regional Bell holding companies have got a 50-pound ISDN hammer, and to them, everything else is begin-

ning to look like a nail.)

Like my friend, we are still only asking how this new technology can help us do a better job at what we're already doing well now. The real catalyst for ISDN, I suspect, will not be the equivalent of a slightly better filing cabinet — it will be something not anticipated; something entirely new.

A few folks in the communications industry might say I'm whistling past the graveyard, but telecommunications managers and manufacturers are both starting to seriously hedge their bets. National trends show that sales of private branch exchanges and key systems are relatively flat, while digital Centrex, with its migration path to ISDN, shows steady growth. (And I've actually heard rumors that one or two live ISDN lines have been sold, as well.)

By and large, the RBHCS have now committed to national, ubiquitous ISDN availability. Also, ISDN switch manufacturers have realized that an important part of their central office sales support must come at the desktop with more ISDN-compatible sets — and they are providing them.

More manufacturers than ever are supporting these central office-based services at the desktop as well as in the computer and telephone equipment rooms. Just try selling any PBX these days that is not ISDN-compatible.

That fundamental synergy between availability and innovation has begun at last. However, we need to remember that it was not until after IBM introduced its PC that many users took notice and the market for clones, personal productivity software and applications really started growing. Only then did the PC become more than a techno-curiosity reserved for the experts.

And we discovered once again that in a market economy such as ours, once a new technology becomes widely available, many ingenious people will figure out numerous new ways to make a dollar from it.

I suspect that soon many will no longer be saying, "ISDN means I still don't know," but rather, "Oh yeah, why didn't I think of that?"

Rodemaker is a communications consultant with Illinois Bell Telephone Co. in Oakbrook, Ill.

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**Richard Sidoll**  
Telecommunications Director, Morgan Stanley

**Laura Swanton**  
President, NetWare Users International  
Manager of Technical Services, Bryant Universal Roofing,  
Inc.

**Stanley Welland**  
Manager, Corporate Telecommunications

General Electric Co.

**Ronald West**  
President, Association of Data Communications Users  
Manager of Telecommunications and Office Automation,  
Shearman & Sterling

# EDITORIAL

## U.S. needs comprehensive info technology policy

While some choose to debate whether Japanese or U.S. workers are more intelligent or productive, one thing is clear. A driving force behind the Japanese economic juggernaut is that government's ability to identify key economic objectives and work hand in hand with industry to see that those objectives are achieved.

This is not the case in the U.S. Owing either to the vagaries of the political process, the lack of vision of U.S. leaders or the apathy of the American public, the nation lacks a blueprint for sustained economic growth and dominance in key industries.

Simply said, the U.S. is in desperate need of an economic policy. What's more, a key underpinning of that economic plan should be a U.S. information technology industry policy.

On that issue, we are in wholehearted agreement with George Heilmeier, president

and chief executive officer of Bell Communications Research.

In a keynote address at the recent ComNet conference in Washington, D.C., Heilmeier challenged political leaders to establish an information technology strategy that would spur growth of a more robust national network infrastructure, new information services and products as well as new business opportunities.

Not surprisingly, in Heilmeier's vision, the regional Bell holding companies are freed from binding regulations to tackle new markets. But the Bellcore boss also acknowledges the need to ensure the viability of RBHC competitors at the network services and information services levels.

In fact, the network that Heilmeier envisions would be a veritable feeding ground for entrepreneurs, who would flock to the net to ply their high-tech wares.

We'd build on Heilmeier's vision with information technology industry initiatives that ensure the continued growth of the U.S. high-technology sector. Those ought to include special tax considerations and other incentives for high-technology research and development as well as for investment in information systems that make U.S. companies more competitive.

And, as we've urged previously, the U.S. needs to protect its information technology industry players from unfair trading practices abroad.

Unfortunately, in this election year, we're hearing little more from the candidates than rhetoric on trade and stopgap measures designed to address isolated problems.

Until the U.S. drafts a far-sighted economic policy, all industries, including information technology, are at risk in the global economy.

# OPINIONS

## MACROSCOPE

BY JAMES KOBIELUS

# Overcoming net managers' fear of chargeback systems

Introduction of telecommunications chargeback can churn up conflict in the relationship between network managers and end users. However, it's a topic that demands a more unflinching and well thought-out response from network professionals.

Network managers are averse to chargeback for two reasons. First, chargeback exposes one of the most common weaknesses in network operations: the lack of accounting systems to identify costs by service offering or user.

Few telecommunications professionals have a decent breakdown on how much is being spent to provide a given user with a given level of service on a given day, hour and minute — the prerequisite for meaningful chargeback.

Of course, one of the most common reasons why such accounting systems haven't been established is that network managers have seldom been required to break down their costs to this level of detail.

In many firms, telecommunications is treated as pure corporate infrastructure and funded out of overhead budget accounts. But even in such companies, many network managers realize that they should improve their cost accounting practices because they need to tighten operations and make better use of their limited budgets.

A second reason why network managers resist chargeback is that it may cost more to implement than it's worth. They must establish operations staffed by accountants and administrators; equip them with automated tools to track orders, deliveries, inventories, charges,

billing and collection; implement policies and procedures for handling service pricing, inquiries and other matters; and develop billing formats that make sense to users.

On top of these administrative concerns, network managers must navigate a mine field of technical and political issues. One technical issue is determining whether current carrier and vendor billing formats provide the level of detail needed to pass charges through to end users.

Another technical consideration is determining whether usage accounting on corporate private branch exchanges, file servers, routers and other equipment is adequate — or even feasible.

Intracorporate political obstacles to chargeback include debates on which telecommunications systems, services and support will be guaranteed and funded from corporate overhead and which must be paid for by users. Chargeback opponents try to limit its applicability by arguing that most telecommunications equipment and services are a competitive necessity that must be subsidized from corporate overhead.

Advocates counterargue that chargeback contributes to greater corporate efficiency — hence, competitive advantage — by allowing business units to choose the level of service that's best for them and pay prices that reflect the underlying costs.

However, the argument in favor of telecommunications chargeback will be won on the basis of brute necessity. Telecommunications budgets are under pressure and managers are looking for ways to stabilize revenues and avoid service cutbacks.

At the same time, corporate finance, in a cost-cutting drive, is using chargeback to determine which services are valued most highly by business units and which should be scaled back or discontinued.

Some organizations are using

chargeback to reconstitute corporate telecommunications as an internal profit center or at least as a self-supporting activity.

Network managers must regard chargeback as a means of securing improved efficiency and customer service in their operations. To establish an effective chargeback program, you should:

- Address chargeback considerations in enterprise telecommunications planning.
- Identify the basic level of systems, services and support that will be guaranteed and funded across the enterprise.
- Establish an accounting scheme that breaks down telecommunications costs by service and user category.
- Maintain rough parity between intracorporate telecommunications charges and prices charged by vendors of similar equipment or services.
- Give users the option of purchasing directly from third parties if corporate charges depart significantly from competitive prices.
- Expand technical integration among usage tracking and accounting subsystems on voice, data and other communications systems.

- Reevaluate continued relations with network systems vendors whose accounting capabilities are lacking or inadequate.
- Automate intracorporate billing and collection activities as much as is feasible and cost-effective, exploring electronic messaging and funds transfer capabilities.

A word of caution: Telecommunications managers must be careful not to appear as if they're using chargeback simply to feather their fiscal nests. Network managers can preempt such suspicions by involving users directly in the setting of corporate chargeback policies, procedures and rates. Those who gouge their customers risk hastening the day of their departure. **■**

*Kobielus, a contributing editor to Network World, is a telecommunications analyst with Fairfax, Va.-based Network Management, Inc., one of the largest local- and wide-area network systems integrators in the U.S.*

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## TELETOONS

BY FRANK AND TROISE

Oh, no, Ralph... **YOU** tell the LAN Administrator that you're leaving early to finish an article for "Real Man's Outdoor Networking" Magazine!



## Be sure not to miss:

The first Guide to Strategic Purchase Decisions debuts in this week's issue.

In these recessionary times, network managers need information at their fingertips on the latest strategies and technologies that will allow them to save money while remaining competitive. Providing that information is one of *Network World's* primary goals.

In an ongoing effort to improve our coverage of important issues and developments that affect our readers, *Network World* this week is introducing a new series of articles: Guides to Strategic Purchase Decisions.

The purpose of this type of article is to cover the key products or services in a given market and explain how the differences among those products and services will either limit or empower them. Network purchasing decisions can cause a domino effect that limits users' future choices to only those products and services that are compatible.

The first article in this series

starts on page 1 and covers the hot topic of outsourcing. With revenues estimated to top \$49 billion annually by 1994, outsourcing not only provides cost advantages and allows network managers to improve service to end users, but it also frees staff to focus on the company's primary business.

Finding the most appropriate provider is a key step in the decision to outsource. That's where our guide can help you.

It provides a close-up look at the differing approaches of the top five outsourcing vendors: Andersen Consulting, Computer Sciences Corp., Digital Equipment Corp., Electronic Data Systems Corp. and IBM.

Keep reading *Network World* for future Guides to Strategic Purchase Decisions. Next on the slate are topics such as virtual network services, open net management platforms, local-area net operating systems and distributed database management systems. **■**

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## GUIDE TO STRATEGIC PURCHASE DECISIONS

### OUTSOURCING

CONTINUED FROM PAGE 1  
consider when shopping for an outsourcing provider, and compare and contrast the different approaches and philosophies of the top five providers. Although the guide focuses on the top five players, the questions raised here can and should be applied to every outsourcing vendor.

The top five full-service, cross-industry outsourcing vendors, based on market share forecasts from The Yankee Group, are Andersen Consulting, Computer Sciences Corp. (CSC), Digital Equipment Corp., Electronic Data Systems Corp. (EDS) and IBM.

Traditional facilities managers and computer center outsourcing providers, such as CSC and EDS, have been quick to note the increasing user interest in network outsourcing and are beefing up their capabilities in this area. IBM and DEC, which bring detailed understanding of data communications to the market, also have provided facilities support for several years. And Andersen Consulting is known for its expertise in applications and computer operations.

For the most part, outsourcing providers fall into one of four categories: systems integrators, computer vendors, niche market specialists or common carriers. Vendors falling into each category have different strengths and weaknesses that should be care-

*Turner is a principal with Northeast Consulting Resources, Inc., a Boston consulting firm that focuses on strategic management and information technologies. Juneau is a free-lance writer based in Salem, Mass.*

fully evaluated.

Systems integrators oversee the design and installation of multivendor networks and computing systems. They seek out long-term deals typically ranging from five to 10 years that are worth tens of millions of dollars. These firms generally expect to assume ownership of the customer's communications assets and management staff.

In addition, systems integrators are less likely to build common networks designed for resale to multiple end users than

er-owned information systems (IS) facilities. For example, CSC and EDS have offered facilities management services since the 1960s.

CSC and EDS gravitate toward large contracts involving extensive applications integration and data center management. They may refrain from bidding on jobs with very high network transmission components and relatively low IS requirements and have been known to pass up "smaller" deals amounting to under \$2 million annually. These vendors pre-

deals involve substantial computer systems and facilities management. These include contracts with First Fidelity Bancorp, worth \$450 million, and Saab Automobile SB, valued at \$300 million. These figures represent the total value of the contract.

CSC, on the other hand, operates the largest outsourced secure network on behalf of the U.S. Department of the Treasury. The company has an eight-year, \$300 million deal to operate the Treasury Department's Consolidated Data Network, which spans more than 1,000 sites and supports 23,000 users nationwide.

In November, CSC won one of the largest outsourcing deals ever: a 10-year, \$3 billion contract with General Dynamics Corp., under which it will assume control of the company's IS, network services, staff and assets.

Because they often absorb clients' staff, large systems integrators have significant industry-specific knowledge. Some, including Andersen Consulting, also have management consulting divisions that offer requirements analysis.

Andersen Consulting has operated networks and computing resources for clients on an ad hoc basis for a number of years. However, the company has identified systems management and outsourcing as a strategic business area only since the mid-1980s.

Andersen Consulting's major deals include Sun Marketing and Refining Co., worth \$180 million over the life of the contract.

#### Computer vendors

While systems integrators have always made outsourcing a

## A close look at the differing approaches of the leading outsourcing providers — and what they mean for potential users.

are other types of outsourcing providers. Instead, they tend to focus on highly customized deals.

Some of the largest and most experienced systems integrators cut their teeth providing facilities management, using their own staffs to run and manage custom-

fer deals that involve data center or applications support but will also go after pure network solutions if the price is right.

Slightly less than half of EDS' business comes from services outsourced by its parent, General Motors Corp. Most of its major

*Network World* this week introduces a new series of articles, *Guides to Strategic Purchase Decisions*.

These articles will provide an in-depth examination of the key technology buying decisions network executives face. They will explore the products

and services that, in large measure, define the net architectures users are developing.

The series is designed to help users make strategic buying decisions that influence future applications and net management choices and shape their enterprise networks in the future.

## Comparing the top 5 outsourcing vendors

Company	Annual revenue	Revenue percentage from outsourcing	Number of countries served	Staff size/Percentage of staff devoted to outsourcing	Number of years in outsourcing business	Average contract size	Average contract length	Minimum contract length	Integrated network management systems supported/Proprietary net management systems	Billing options	Percentage of contracts involving staff assimilation	Networking strengths
Andersen Consulting Chicago (312) 372-7100	\$2.3 billion	4.3%	8	21,000/10%	4 years officially	\$20 million to \$25 million over life of contract	More than 8 years	18 months	IBM's NetView, Hewlett-Packard Co.'s OpenView/None	Master billing or data breakdown by job and by department/business unit for internal billing	75% to 80%	SNA, DECnet, TCP/IP, Novell, Inc.'s IPX, Banyan Systems, Inc.'s VINES
Computer Sciences Corp. El Segundo, Calif. (213) 615-0311	\$1.7 billion	27%	8	25,000/33%	28 years	\$1 million to \$500 million annually	5 years	2 years	NetView, OpenView, DEC's DECmcc Director/CSC's Life Cycle Network Management Platform	Tailored to customer's requirements	70%	SNA, DECnet, IPX, TCP/IP, VINES
Digital Equipment Corp. Maynard, Mass. (508) 493-5111	\$13.9 billion	40% from services including outsourcing	84	117,000/1.3%	4 years officially	\$500,000 over life of contract	1.5 years	3 months	NetView and DECmcc Director/DEC's Enterprise Network Operations Platform, Assets Library of System and Network Tools, DEC Alert, VAXsim Plus	By contract; master billing, monthly, annually, semiannually	1%	DECnet, TCP/IP, SNA, Apple Computer, Inc.'s AppleTalk, IPX
Electronic Data Systems Corp. Plano, Texas (214) 604-6000	Approximately \$7 billion	100%	28	64,000/100%	30 years	\$10 million to \$50 million annually*	Approximately 5 to 10 years*	Approximately 3 years*	NetView, OpenView, DEC Polycenter/EDS Network Management	Support multicompany, multidivision billing via Technical Services Billing System	Over 80%*	SNA, LANS (NetWare, LAN Manager, VINES), DECnet, TCP/IP
IBM Armonk, N.Y. (914) 765-1900	\$69 billion (1990 figures)	Approximately 40% from services including outsourcing*	90	350,000/40% for services including outsourcing	Data center outsourcing: 2.5 years; network outsourcing: 10 years	Under \$500,000 annually*	IIN: 3 years; ISSC: 5 to 10 years	1 month (IIN)	NetView/PC-based artificial intelligence monitoring tools (IIN)	Billing by end user, department, division, company or enterprise	0% (IIN)	SNA, X.25, TCP/IP

\* Vendor declined to provide an answer; estimate courtesy of Northeast Consulting Resources, Inc.

DECmcc = DEC Management Control Center

IIN = IBM Information Network

IPX = Internetwork Packet Exchange

ISSC = Integrated Systems Solution Corp.

SOURCE: NORTHEAST CONSULTING RESOURCES, INC., BOSTON

(continued from page 31)

main part of their business, computer vendors have been forced into the outsourcing market by the demands of their customers and the erosion of profits on computer sales.

Any outsourcing, be it a computer vendor or systems integrator, must be able to support multivendor computing and communications. Thus, while vendors, such as IBM and DEC, are looking to convert their installed base of customers into outsourcing clients, they are also investing in skills and systems that will enable them to support other vendors' platforms. DEC, in fact, has won several accounts involving little or none of its own equipment.

IBM has been informally involved in facilities and systems management since the mid-1980s. Last June, IBM transferred its systems management functions to the Integrated Systems Solutions Corp. (ISSC), a wholly owned subsidiary. Network outsourcing is supported by staff associated with the IBM Information Network (IIN), Big Blue's global, value-added network, which provides the transmission resources necessary for outsourced data network services.

Some of IBM's major deals include Continental Bank, worth \$700 million over the life of the contract, and a facilities manage-

ment contract with Eastman Kodak Co., worth a total of \$500 million.

DEC has capitalized on its knowledge of distributed computing, client/server network architectures, internal network facilities and worldwide service organization to land outsourcing deals here and abroad.

profiles as their larger competitors. However, they may be interested in deals that larger outsourcingers would consider too small — that is, under \$1 million annually.

Common carriers, including AT&T, MCI Communications Corp., US Sprint Communications Co. and British Telecom-

five major vendors, Andersen Consulting, CSC and EDS pursue turnkey outsourcing arrangements most aggressively. As a rule, IBM, DEC and most of the niche players tend to look for more segmented deals but will not turn away from a turnkey bid if there is a chance to win the business.

EDS actively seeks to acquire the staff and facilities of its clients. More than 25%, or about 17,000, of EDS's employees once worked for customers.

CSC routinely supports turnkey information systems and network services for large government agencies and more recently, commercial organizations. The company generally acquires all staff, capital assets, planning functions and operations. For example, CSC is absorbing General Dynamics' data systems division staff of 2,600. In addition, CSC will take over whole buildings, related equipment and support systems if appropriate.

In a modular outsourcing arrangement, the vendor takes complete control of client staff, capital equipment, design functions, operations and management duties for only one clearly defined part of the network. For example, the outsourcing provider may take over the client's IBM Systems Network Architecture network, point-of-sale network, voice services, or client/server

network, but not all four.

In a shared outsourcing arrangement, a vendor may supplement rather than replace internal staff functions. Such a deal generally does not include acquisition of staff. Rather, it's geared more toward the partitioning of responsibility. For example, the vendor might handle only backup network management services or off-hour operations. Customers generally retain most of their capital equipment and staff but find they can get more done with the same head count.

IIN, which often takes on shared outsourcing arrangements, does not generally absorb client's employees or assets. Users of the worldwide network include companies such as Mitsubishi Electronics America, Inc., which outsourced its access lines for customers, suppliers and employees while retaining control of its corporate backbone.

DEC believes modular and shared outsourcing will soon be the most popular outsourcing options. Although DEC's flagship deal is a turnkey arrangement with Eastman Kodak, the bulk of DEC's outsourcing arrangements are more limited and the company often views the initial outsourcing contract as a first step in an ongoing relationship.

Systems integrators tend to be less interested in modular or

### The three service choices

The extent to which an outsourcing vendor becomes involved in the client's operations is defined by three basic levels of service: turnkey, modular and shared.

Complete turnkey outsourcing involves the transfer of all network staff, capital equipment, design, operations and management to an outside vendor. Of the

**A**ny outsourcing must be able to support multivendor computing and communications.



In a major coup last year, DEC won the network outsourcing component of the Eastman Kodak deal, the value of which is not publicly known. DEC also operates the help desk for Citibank Australia and runs an international network for a leading European retail chain.

Some smaller systems integrators and equipment vendors target specific technical niches or vertical markets. For example, Systematics, Inc. specializes in banking, Network Management, Inc. targets local-area networks and Cybertek Corp. focuses on the insurance industry. These vendors tend to have the same

communications PLC's Syncordia Corp., are also investing in domestic and global outsourcing services. (For more on the carriers, see "The new players: common carriers," page 34.)

### The three service choices

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(continued from page 32)

shared deals, except in cases where the modules are sized in million-dollar-plus chunks and lead to increasing levels of responsibility over time. However, pressure from computer vendors and niche players is likely to make systems integrators more willing to think modularly in the future.

Computer vendors are generally willing to start with a small outsourcing contract in the hopes of building up to bigger things. This approach has worked for some. For example, Quotron Systems, Inc., a Los Angeles-based provider of financial information services, has an extensive outsourcing relationship with DEC that evolved piece by piece, says Santo Crisafulli, Quotron's director of global operations and systems, foreign exchange.

Quotron's initial contract called for DEC to provide field service for Quotron's product, an interactive trading system used by bankers around the world. DEC soon started assuming other duties including monitoring Quotron's network, providing redundant configurations in the net's hub cities and managing help desks at five locations. DEC will this year take responsibility for managing all of the net's nodes.

#### Evaluation criteria

After a company has identified whether it requires turnkey, modular or shared service, it should establish a set of service parameters to measure how successfully an outsourcer can meet these needs. These parameters include such factors as availability, response time, mean time to repair equipment and new service installation intervals.

Some vendors provide real-time, automated access to network performance measures. Others provide historic reports.

For example, Andersen Consulting typically provides its customers with historic rather than real-time reports on performance levels because the tools that monitor its shared network cannot be easily partitioned and protected. However, Andersen Consulting stresses that it will work with the customer on this issue to craft an acceptable deal.

Once an organization's outsourcing requirements and appropriate measures of success have been identified, it can begin to review the credentials of several vendors and compare them to the capabilities of existing internal staff.

At a minimum, network executives need to consider vendors' qualifications in two basic areas. The first is experience, including project management expertise, familiarity with specific industries and knowledge of strategic technologies. The second is technical infrastructure, including network management capabilities, network facilities, provi-

sions for ensuring adequate network security and reliability, facilities for testing and evaluating new technology and support of multivendor equipment and protocols.

In general, it makes sense to select a vendor that not only has years of experience providing network outsourcing services, but is also comfortable with the type of outsourcing arrangement required.

The vendor's experience with the customer's type of business is critical to understanding and anticipating the organization's network needs. The top five outsourcing firms have expertise in various vertical markets.

CSC targets health care, manufacturing, financial services, federal government and insurance organizations, while EDS identifies 30 key markets with manufacturing (including GM), financial services, government and international organizations making up the bulk of its current contracts.

Andersen Consulting concentrates on 11 key industries, including financial services, telecommunications, manufacturing, health care, state and local government, energy and utilities.

DEC's industry strengths include finance/banking, manufacturing, government, health care and telecommunications. Industries in which IBM provides outsourcing services include retail, health care, insurance, financial services, manufacturing and processing.

Another experience-related factor that can affect a vendor's ability to provide outsourcing services for a particular client is the vendor's knowledge of strategic technologies. For example, DEC tends to seek out outsourcing deals that enable it to use its expertise in distributed computing architectures, global electronic mail systems, LAN interconnection and client/server application development.

Through IIN and ISSC, IBM approaches network outsourcing and management as an integrated systems and network problem. That is, IBM works with the client to develop an application profile, choose the optimum computing architecture — whether it be a mainframe, distributed processors or LANs — and determine the appropriate network topology as a package. In general, ISSC will handle turnkey applications and network solutions. In addition, ISSC will focus on distributed data networks that can be economically supported by IIN.

In both cases, IBM will draw on an account team with industry-specific knowledge to supplement the technical capabilities of IIN and ISSC.

The right balance between an outsourcer's technical and industry knowledge will vary depending on the organization's requirements. But it is important to be

## The new players: common carriers

In addition to the Big Five outsourcing firms, users looking to contract their network operations out to another firm should consider common carriers as an option.

In general, carriers are more willing than traditional outsourcing firms to work under shorter term contracts and support commodity transmission requirements. Major carriers also recognize that they must offer router, bridge and local-area network interconnection services; logical network design and support services; and management of private branch exchanges, multiplexers, modems and related customer premises equipment.

For large customers, major common carriers — such as AT&T, MCI Communications Corp., US Sprint Communications Co. and Infonet Services Corp. — offer transmission and switching service discounts via traditional bulk agreements and a wide array of network management services.

Global networks are a particularly lucrative target for carriers. British Telecommunications PLC (BT) established its Syncordia Corp. subsidiary to aggressively pursue international network outsourcing.

Syncordia offers multilingual customer service centers, provides new service in days rather than months, custom designs service-level agreements and, under certain conditions, is willing to credit customers with as much as a year's worth of service fees if it does not satisfy service-level agreements.

To ensure that service levels are maintained, Syncordia relies on Concert, BT's standards-based integrated management platform. Syncordia's first customer is Amadeus, an airline reservation consortium.

AT&T's major outsourcing

initiative is its Accumaster Management Services (AMS). Under AMS, AT&T provides turnkey design, installation and operations for voice and data networks. The service also uses many management tools including Accumaster Integrator, AT&T's integrated network management platform. Major customers include Chevron Information Technology Co., Delta Air Lines, Inc. and Marriott Corp.

For multinational customers, AT&T is sponsoring the Joint Network Initiative, a set of agreements under which BT, France Telecom, Kokusai Den-shin Denwa Company, Ltd. and AT&T agree to provide expedited service, a single point of service order, installation coordination and faster repair services to key international users.

MCI has also identified management as a key outsourcing requirement. Focusnet, its Unix-based integrated management workstation, enables MCI to integrate numerous customer premises equipment management systems with its network-provided management services.

MCI has won a number of domestic and international outsourcing contracts, including one from Visa International, Inc.

US Sprint currently does not have a formal outsourcing program but states that it will bid custom solutions for large accounts.

This year, Infonet will emerge as another carrier turned outsourcer. Once owned by outsourcing powerhouse Computer Sciences Corp., Infonet is now jointly owned by MCI and 10 other international carriers.

Infonet is aggressively developing its Enterprise Defined Network Service (EDNS) offering, a custom designed private network built on the company's

international X.25, Transmission Control Protocol/Internet Protocol-based router and mesh-connected T-1 networks.

Infonet will soon enhance EDNS with its International Network Management Center (INMC). Based on Digital Equipment Corp.'s DEC Management Control Center Director platform, INMC will provide real-time, integrated management of the multiple Infonet resources.

Also, additional proprietary customer service tools are almost ready to be introduced. These tools will support trouble tickets, service status, inventory and other administrative functions and will enable Infonet to manage a net for a customer or share management information with the customer in real time.

Net managers developing arrangements with carriers and their subsidiaries need to craft as strong a contract as they would when working with traditional outsourcing firms.

"A key part of the contract — the statement of work — defines who will do what and how the interface [between the two organizations] will work," says Greg Lee, manager of the customized network services project at Chevron Information Technology, a subsidiary of Chevron Corp. Because responsibilities were clearly outlined up front, Lee's staff has a good relationship with AT&T, the outsourcing vendor.

The purpose of the contract isn't to set the relationship in stone, however. "The intent early on was not to do a deal where we write a hard contract and everyone has that framed on their desk," Lee says. "We have a clear contract, but we also want to have an environment where both organizations are working as a team to achieve the same goals."

— Mary Johnston Turner

clear on what balance is right for the situation before choosing an outsourcer.

For example, when Philadelphia-based Meritor Savings Bank went shopping for a turnkey solution, it limited its search to vendors with experience in the banking industry, says Larry Liss, senior vice-president in charge of operations and technology.

But because the chosen vendor, EDS, hired the bulk of Meritor's knowledgeable IS staff, the vendor's banking expertise turned out to be less essential than it would have been in a more limited outsourcing arrangement, he says.

#### Technical infrastructure

An outsourcer's technical know-how can come into play if a company wants to use outsourc-

ing as a way to upgrade its technical infrastructure and not simply transfer existing systems to an outsourcing vendor. That's why it is essential to evaluate a vendor's technical infrastructure.

Two elements of that technical infrastructure — transmission infrastructure and network management capabilities — can be critical to the success of an outsourcing arrangement. The quality of a vendor's network control center is particularly important: The more comprehensive and automated the control center, the better.

Known over the years as a provider of data center outsourcing services, EDS has recently made significant investments in network outsourcing as well. It built and manages EDSNet, which it

uses to support GM's global network needs and the requirements of other customers when the economics and performance parameters make sense.

EDS staffs a National Aeronautics and Space Administration-like mission control center known as the EDS Information Management Center (IMC) in Plano, Texas. The center supports EDSNet and the networks and systems of more than 7,500 outsourcing customers. In addition, EDS provides on-site management and support personnel as required by the customer's needs.

The company offers a three-tiered network management architecture. Level 1 consists of underlying network elements and their proprietary management

## Maxus' miracle of a deal

Miracles, however minor, do occur. Just ask Jack Seifrick, director of MIS at Maxus Energy Corp. in Dallas.

Seifrick was at the independent exploration firm in 1989 when it formalized a six-year outsourcing contract with Andersen Consulting in only three months. Typically, it takes at least a year to identify potential providers, request and evaluate proposals, and negotiate an acceptable contract.

"It was about a month from the time [Andersen Consulting] approached us to the time we had an agreement in principle, a month until we had a contract, and another month before the effective date," Seifrick says.

Under the terms of the agreement, Andersen Consulting manages Maxus' mainframe processing operations and runs its wide-area IBM Systems Network Architecture net.

Andersen Consulting approached Maxus because it was attempting to get into the outsourcing business in Dallas and needed a showcase client, Seifrick says. In addition to offering a favorable price — which he declines to divulge — Andersen Consulting proposed to take over Maxus' staff of about 25 operations and technical support personnel. Seifrick, who was familiar with the outsourcing services available at that time, felt that this was a good offer.

"One of the reasons we didn't look elsewhere is that we had a

general practice of looking at outsourcingers every time we made a major equipment purchase, so we knew what the market was," he says.

Another factor influencing the quick decision was the fact that Andersen Consulting had already established a solid working relationship with Maxus. In the early 1980s, Andersen Consulting was the principal con-

tractor/consultant on a \$13 million applications development project involving Maxus' oil and gas production system and financial systems.

"That project, which was very large, was very successful," Seifrick says. "It was completed on time and within budget. We were impressed with the type of people we were dealing with."

Since the outsourcing agreement with Andersen Consulting went into effect, Seifrick has seen a savings of 30% on his operations and telecommunications budget and Maxus has migrated to a fully redundant, T-1 network.

In the past, Maxus couldn't afford to run T-1 lines because it didn't have enough slower speed circuits to justify the expense. Now it uses Andersen Consulting's T-1 services, which the outsourcer provides to multiple clients.

Currently, Andersen Consulting is working with Maxus to fold its IBM 3270-based wide-area SNA network into a token-ring structure.

"We saw an ever-increasing need to link our remote LANs and wanted to do that without running data communications lines [that would] duplicate our wide-area network, so we are adding Cisco [Systems, Inc.] routers to our WAN and encapsulating the SNA protocol on the token-ring network," Seifrick says. This arrangement will allow Maxus to connect local-area networks in Louisiana with a LAN in Dallas, for instance, without adding new long-distance circuits.

Network improvements such as this are possible only because Andersen Consulting is open to new technologies and ideas, Seifrick says. The purchase of the Cisco routers and management of the token-ring network will be added to Andersen Consulting's contractual services, which already include management of the WAN.

During the next few years, the Maxus-Andersen Consulting partnership will probably continue to expand, with Andersen Consulting eventually assuming control of Maxus' LANs, Seifrick says. Although the outsourcing deal was struck quickly and painlessly, the continued success of the arrangement will be determined day by day.

— Lucie Juneau

systems, generally known as element management systems (EMS). Level 2 focuses on consolidated management of these underlying EMSs using off-the-shelf vendor-developed tools such as IBM's NetView. Level 3 is made up of proprietary EDS-developed management applications that provide greater levels of management automation and cross-system correlation than is supported by vendor-specific off-the-shelf solutions.

Currently operating in an IBM mainframe and DEC VAX environment, these Level 3 management applications will be migrated by EDS to more distributed computing environments over the next several years.

CSC relies on proprietary, custom-developed network management systems for real-time network command and control. Its Life Cycle System is designed to allow customers and CSC operators to view identical data simultaneously. In addition, the company uses management systems specific to underlying network elements, such as modems, multiplexers and routers.

DEC is basing its network out-

sourcing business on its experience building and operating Easynet, the company's global internal network. DEC uses its own management tools and products, including its integrated network management system, DEC Management Control Center Director. It also makes use of other vendors' element management tools as required.

IBM makes heavy use of its NetView and SystemView management tools, while Andersen Consulting utilizes both NetView and Hewlett-Packard Co.'s OpenView.

### Judging the infrastructure

For users trying to sort through the various vendor infrastructures, the key is to look at how well the vendor can manage and support the given type of computing environment and network. For example, IIN is a commercial, highly reliable global data network with existing links and gateways around the world. Thus, if a company is looking for global access without having to pay for the entire network itself, IIN may be the answer. However, if its security and throughput re-

quirements exceed what IIN can offer, a custom CSC solution might be appropriate.

In terms of management systems, EDS supports a great deal of internal automation but doesn't provide much real-time monitoring and control capabilities at customer sites. Both EDS-Net and Andersen Consulting's network cannot always be easily partitioned, making it difficult for the vendor to hide information on one user's network from another user; hence, they are limited in providing on-line monitoring systems to customers.

By comparison, a CSC or IIN network may provide more real-time customer access because CSC builds dedicated customer-specific networks, while IIN is designed to support multiple customers simultaneously. The types of service-level reports that can be generated will also vary according to the types of management tools used by the vendor. If it makes a difference whether the company gets service-level reports on-line in real time or on paper after the fact, make sure the vendor can provide what is required.

In addition to considering a vendor's network management capabilities, net executives must also evaluate the vendor's ability to provide secure, reliable networking. This issue is particularly important if you're considering a vendor that offers a shared network environment.

For example, Andersen Consulting has built and is continuing to extend a shared transport network, which it can use to support customers from both a cost and performance perspective. Clients may share the network's physical capacity if their logical networking and security requirements allow it.

To support clients on IIN, IBM runs mirror-image data centers that provide hot backup and continuous operations in case of an outage or disaster. And because IBM purchases the backbone telecommunications facilities for IIN from four interexchange carriers — MCI, US Sprint, WilTel and AT&T — the network is well isolated from switch failure. A minimum of three alternate routes, serving as backup paths, is provided between nodes.

IIN's staff works with IBM's product divisions and outside vendors to review new technologies, such as frame relay, fast packet and electronic data interchange. The network architecture department, which is responsible for IIN's infrastructure, looks at new technologies both for use on IIN and for IBM. New products are tested on an IBM internal network before they are incorporated into the customer network, says Chip Lawson, IBM's senior marketing specialist for IIN.

Keeping up with new technologies is also a priority at Andersen Consulting. Approximately 11% of Andersen Consulting's revenues are returned to research and development every year. The company's outsourcing operations draw on technical evaluations conducted by its consulting group. Andersen Consulting often leverages knowledge, resources and tools developed for one client into its work with others.

CSC maintains its New Technology Test and Evaluation Lab, which tracks new products and tests performance and maintenance logistics. Recently, the lab tested frame relay and Switched Multimegabit Data Service products. Many tested products, including those supporting frame relay, are already being deployed in customer sites.

CSC has developed detailed models of how much it costs to design, install and operate very large-scale networks. The company is not committed to any equipment or services vendor and makes technical investment decisions on an account-by-account basis depending on the project life cycle, applications re-

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## Temporary liaison turns long-term

Striking up a temporary liaison with an outsourcing provider can be risky. Because the relationship is short-lived, the outsourcing provider's performance may be disappointing or the savings negligible.

On the other hand, the arrangement may work out so well that it may be hard to abandon. Such was the case with Mitsubishi Electronics America, Inc.'s outsourcing deal with IBM.

When Mitsubishi, based in Cypress, Calif., was pressed to concurrently open a new U.S. data center as well as launch a nationwide interactive data network in the mid-1980s, it sought an outsourcing vendor that could run its network until the data center was operating smoothly.

After considering a list of candidates that included Telenet Communications Corp. (now called Sprint Data Group), IBM and McDonnell Douglas Automation Co. — the last of which was a service bureau that had been running all of Mitsubishi's information systems and network operations — the electronics distributor chose IBM.



Danny Rhyan

its reputation for sensitivity to clients' business needs.

"I can't see anyone in 1992 going into any kind of long-term, serious business relationship with someone that they don't feel intimately understands their business," Rhyan says. "There has to be a good understanding between the two parties. I just can't hand them the interface from my computer and say, 'Here it is, plug me in.' They need to know where I'm headed."

Generally, because of the cost of start-up and the sales process, vendors run deficits for the first year of a contract. Because these excess costs get amortized over the length of a contract, expect lower prices for longer term arrangements.

CSC targets multiyear, multi-million-dollar contracts. It becomes more cost-competitive the larger the contract gets, and its infrastructure is optimized for large custom solutions. CSC is the least likely of the Big Five to bid on shared or modular deals that are less than five years in duration or less than \$20 million in annual revenue.

EDS, which is known as a tough negotiator, is unlikely to bid on a network deal of less than \$2 million annually unless there is a strong value-added systems element or a long-term opportunity for more than just transmission support. EDS prefers long-term deals of three or more years, allowing lengthy amortization of start-up costs.

Andersen Consulting's average outsourcing contract is in excess of \$20 million and runs eight years or longer. However, the company readily admits it has to be flexible in order to win the business.

An average IIN deal with IBM spans three years but may gener-

One factor in the decision was that IBM's Information Network was Systems Network Architecture-based, as was Mitsubishi's, says Danny Rhyan, manager of operations and telecommunications at the electronics firm. This promised to make for an easier and speedier transition, he adds.

Rhyan was also swayed by IBM's technical expertise.

"When we first looked at [IBM's] net, we were very impressed with the layers and layers of [networking] code that IBM had developed from the ground up," he says.

Another big plus for IBM was

One pleasant surprise has been IBM's flexibility, Rhyan says. The vendor has offered pricing agreements that have been complementary to Mitsubishi's business.

Mitsubishi has an on-line, automated price quotation system, which its dealers and customer representatives access via dial-up lines.

To have such a network, it makes sense to negotiate a fixed cost for connect time, according to Rhyan.

"With IBM, people think the meter's always running, but it's just not the case," he says. "[IBM has] been willing to deal more in fixed pricing agreements. That's good for us because now we've got a much more predictable [cost] level. We maintain price protection throughout the term."

Mitsubishi's original two-year contract with IBM went into effect in early 1986. Since then, Rhyan has renewed it twice.

"Originally, we wanted to stay with IBM just until we were prepared to do it ourselves," Rhyan explains. "However, we still don't see enough value for us to bring the network in-house. Overall, when I look at the big picture, I don't think I can provide as good a level of service as they can."

— Lucie Juneau

provider will keep in mind the interests of the company's employees. Trust that, over the long term, the vendor will work with the organization to keep the company competitive, not simply to drive down its own cost of doing business.

Outsourcing is an investment in a company's future. As in any

investment, the firm should select strategies and structure agreements that match its risk profile; these will vary widely across industries and companies. The network outsourcing industry recognizes the need for flexibility, and at least one or two vendors will rise to accommodate a fairly structured deal. □

## Big outsourcing not always better

Network managers evaluating potential outsourcing providers can take a lesson from Goldilocks and conclude that bigger isn't always better. In fact, a smaller outsourcing vendor may be just right.

In December 1988, Long Beach, Calif.-based Ultramar, Inc., a large independent oil refining and marketing company, acquired a new refining facility in Wilmington, Calif. Faced with the prospect of substantially expanding its IBM Systems Network Architecture-based data center and network operations, Ultramar instead decided to investigate outsourcing.

Over a period of several months, Herbert Chaplin, Ultramar's director of MIS, and his evaluation team considered several outsourcing vendors, including some of the largest in the industry. But the team eventually requested proposals from three smaller firms.

"By the time we requested bids, we had eliminated the biggest suppliers from our thinking," Chaplin says. "All of the vendors [considered] were quite capable of satisfying our needs. But in preliminary discussions [with the vendors], we determined that we would be better suited to a [smaller] company."

Ultramar ultimately selected Dallas-based Power Computing Co. The firm, which currently employs about 300 people and serves 450 outsourcing clients, has landed approximately 13 multimillion-dollar outsourcing contracts in addition to Ultramar's in the last two years. Its revenue for 1991 is estimated at \$43 million.

One of the primary factors in the selection was Power Computing's willingness to enter into a close business partnership. "We were looking for an opportunity to work as a business partner with the vendor, not simply pay a monthly in-

voice when it came due," Chaplin says.

Since signing the contract, the two firms have engaged in several joint efforts. "We recently implemented a stylized version of [the electronic mail portion of] IBM's OfficeVision/MVS," he says. "We specified what was appropriate for Ultramar, and Power [Computing's] staff did the unique documentation, prepared unique training materials and trained users."

Ultramar's staff also works with Power Computing to run a help desk.

From the inception of the three-year contract, Power Computing has passed on price reductions resulting from operating efficiencies, according to Chaplin.

"As Power Computing expanded its MVS operations, it migrated our processing from an older IBM 3081 platform to the newer 3090 technology," he says. "This has allowed Power [Computing] to reduce its costs and pass on these savings to its customers. Because we had anticipated escalating costs over the course of the contract, the savings have been all the sweeter."

Chaplin estimates that as a result of outsourcing, Ultramar is saving more than \$1 million a year, including savings on staffing, facilities, and software and hardware.

Outsourcing also allows Ultramar to maintain a lean information systems staff, which is free to focus on developing applications in order to meet the needs of the new business. Today, Ultramar would require approximately 12 additional staff members if it were running its data center and network itself, he adds.

"You only need a fireman when there's a fire," Chaplin says. "If you own the fire company, you have to pay them all the time."

— Lucie Juneau

*continued from page 35*

quid requirements and costs forecasts. CSC has chosen not to build a shared network infrastructure; its customers tend to be large enough to justify completely dedicated networks.

DEC leverages its internal Easynet as well as a plethora of automated, internally developed management systems that support everything from building environmental monitoring to logistics and bill reconciliation. Recognizing the inevitable heterogeneity of networks, DEC routinely supports multivendor solutions.

### Counting costs

Just as important as getting to know an outsourcing provider's technical infrastructure is understanding its pricing. It is as important to negotiate a reasonable pricing structure as it is to establish a total dollar amount. Costs should be predictable over the life of the contract.

For an outsourcing deal to be worthwhile from a cost standpoint, assume that you must achieve total savings in the neighborhood of 15% over the cost of operating a similar network on your own. That figure is the typical return on investment most companies seek before making a major investment.

ate as little as tens of thousands of dollars annually. Because IIN is also designed to sell services on a monthly, fee-for-use basis, IIN-supported deals can be some of the smaller and shorter arrangements available.

A typical outsourcing deal with DEC spans 1½ years and comes in at about \$500,000 during the life of the contract. DEC is a champion of the modular and shared outsourcing approach, and is likely to consider almost any arrangement it feels could lead to a long-term relationship.

Experienced negotiators, including Meritor's Liss, warn that committing to annual inflationary adjustments can result in unexpected expenses. Therefore, they should be limited, he says. In addition, he suggests that users limit the amount they will pay for incremental volume above what has been initially planned for the outsourced network.

While it's important to be a tough negotiator, company executives should also try to strike a fair deal with outsourcing providers who are squeezed out of reasonable profits are sure to take shortcuts later.

The bottom line on outsourcing is that it requires trust. Trust that the vendor will provide the specified level of service for the agreed upon cost. Trust that the

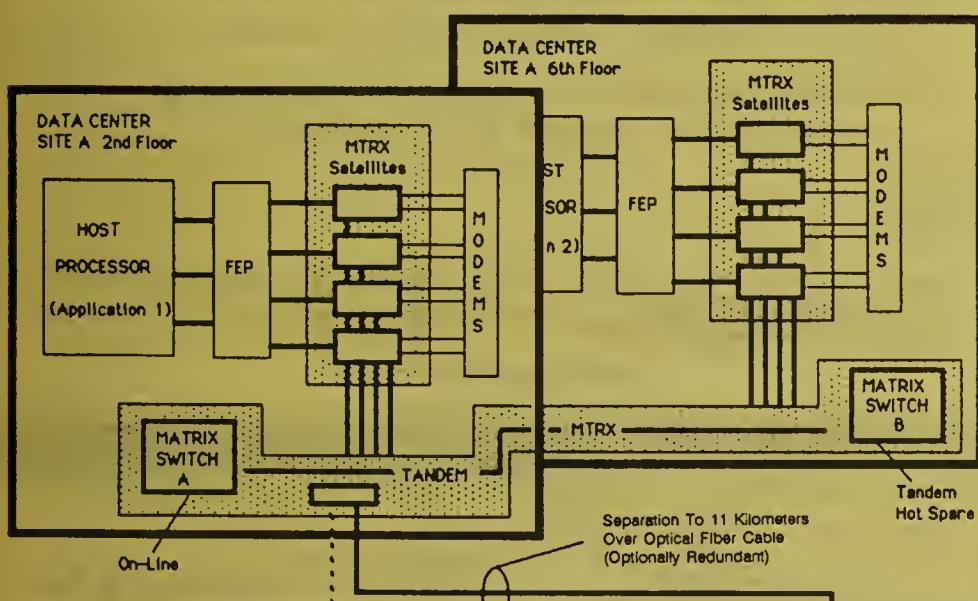


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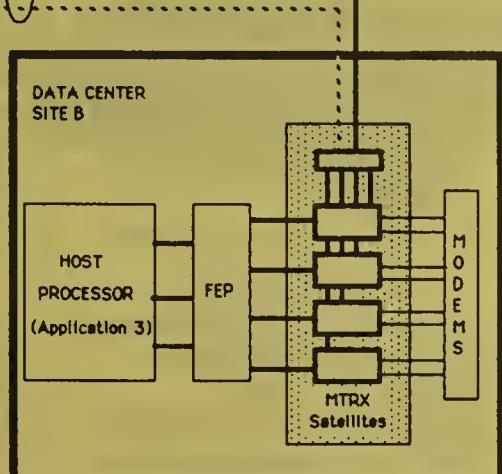


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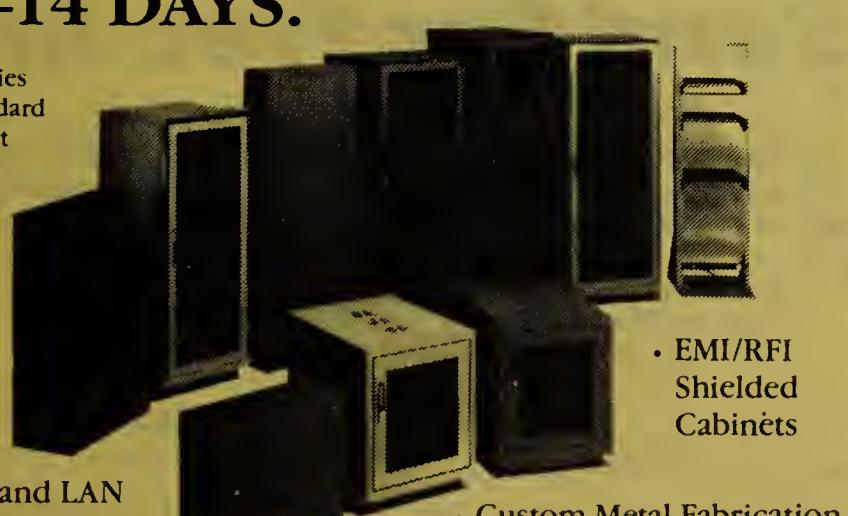
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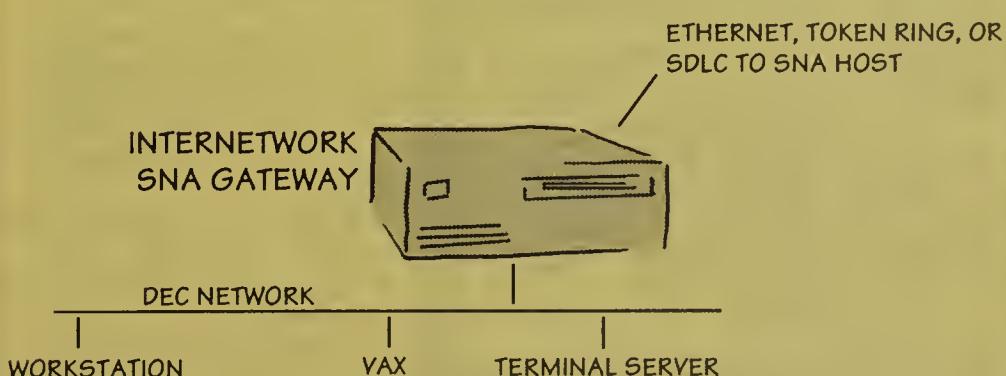
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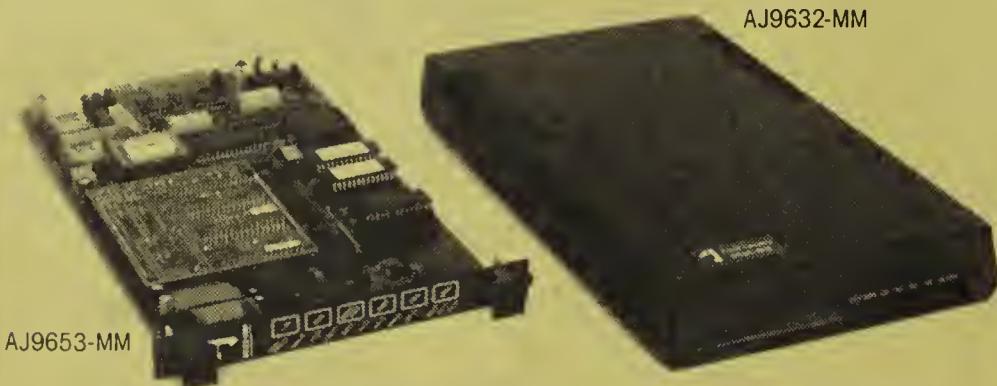
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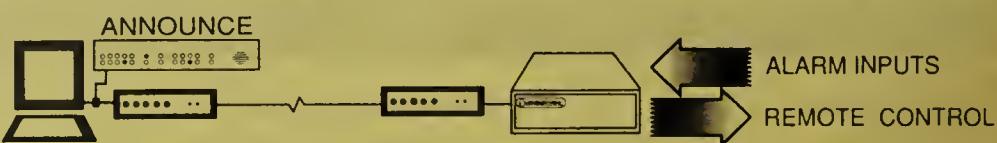
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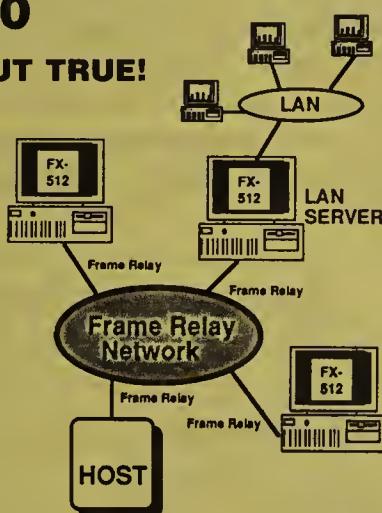
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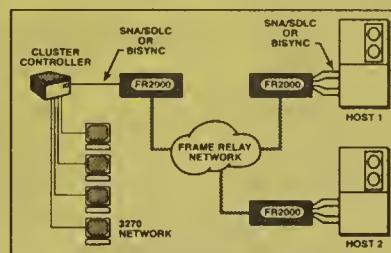
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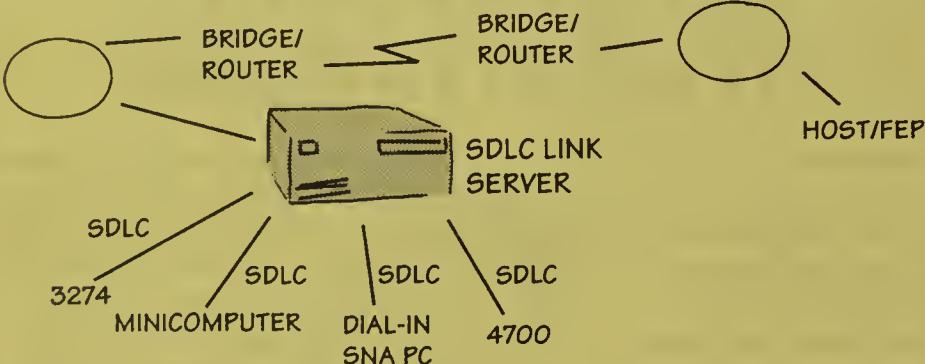
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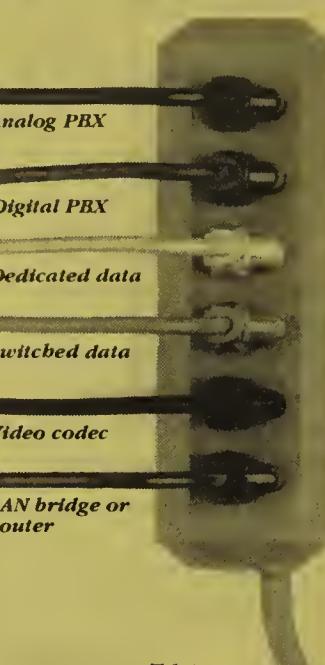
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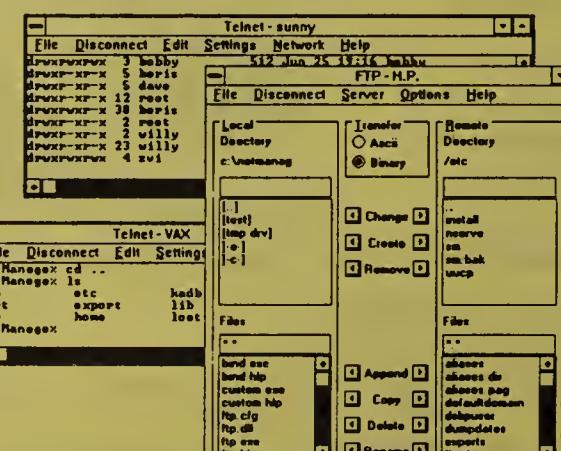
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### DATA RACE Announces Multiplexer Breakthrough

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By Paul Longoria

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With today's economic climate, corporate management will be pleased with Data Communication Managers that use this affordable, new technology as an easy, fast way to save on tight budgets.

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DATA RACE, a long-time price/performance leader in the statistical multiplexer field, is introducing the industry's most cost-effective, high performance Voice/Fax/Data Multiplexer series. From 8 to 64 ports, the new MACH DS multiplexers include these 5 important features:

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— MIS Manager

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State Of California

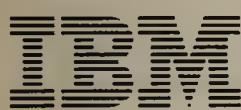
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IFB-DDS-1024

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Contact: Don Perrin



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Contact: D. R. Perrin



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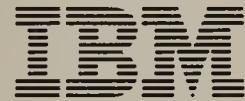
### Sub-Bids Requested From Qualified MBE/WBE/DVBE Subcontractors & Suppliers

State of California

Installation, Testing, Training, Technical Support, X-Windows Programming and Computer Peripherals  
RFP-DOJ-1032

PLEASE RESPOND BY: MARCH 2, 1992

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Registration Fee: \$895

The 1992 Technology Forum will discuss how end users can overcome the management and technical barriers that prevent them from applying distributed and object-oriented technologies to solve mainstream business problems. Attendees will leave the conference with concrete "next steps" to put into action in their organizations.

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**Reminder:**  
The Mar 2nd Issue  
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# NETWORKING CAREERS

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#### The Mar 2nd Issue

Closes  
Feb 19th

#### The Mar 9th Issue

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Feb 26th

#### The Mar 16th Issue

Closes  
Mar 4th

#### The Mar 23rd Issue

Closes  
Mar 11th

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*Networking Careers On-Line* can be accessed 24-hours a day on the *Network World Bulletin Board System (BBS)*. Call today!

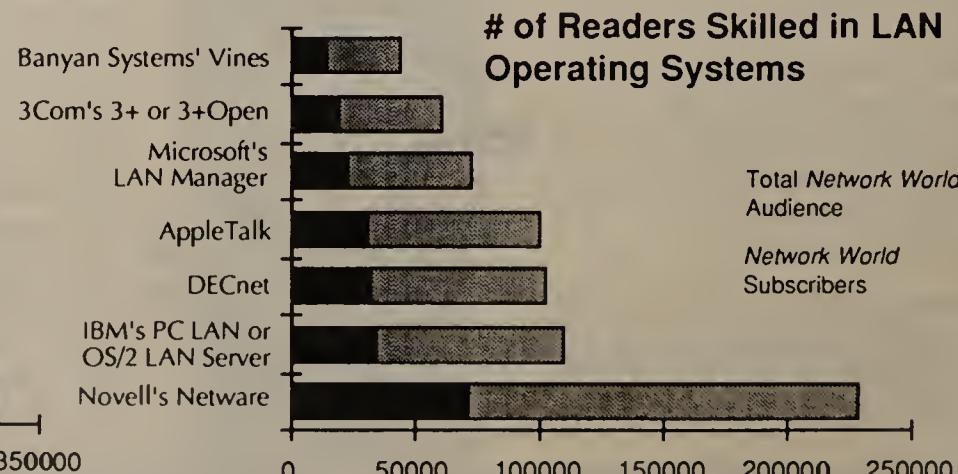
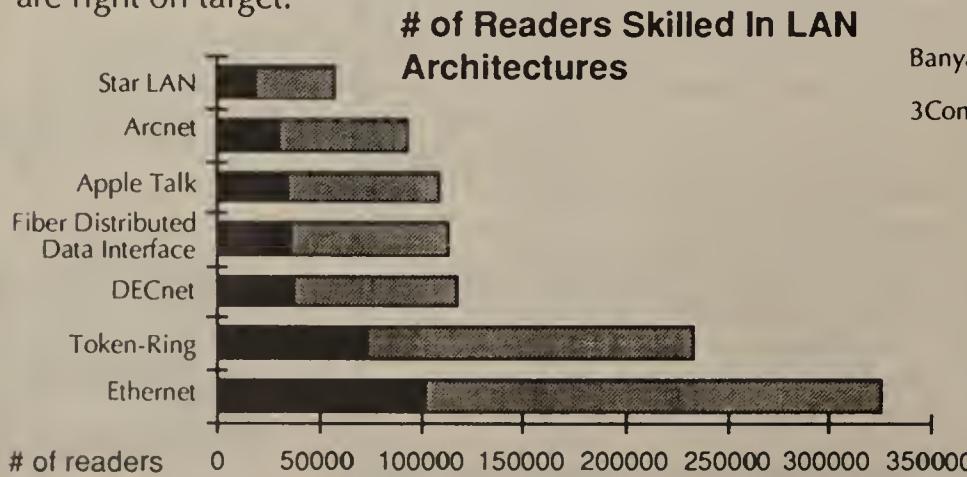
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SOURCE: *Network World*, Audience Career-Skills Survey, 9/91

## ALLIGATORS IN THE SWAMP

*Unforeseen problems that can put the bite on your network*



# Gainesville Gators trounce net gator

The University of Florida transforms wiring plan to tame its fast growing net.

**T**he University of Florida's division-winning football team, nicknamed the Gators, regularly attacks opponents on the playing field. But a few years ago, its College of Journalism and Communications came perilously close to being attacked by a different type of gator — the kind that preys on networks.

In 1986, the journalism school's network was a standard Ethernet comprising 100 nodes, mainly Intel Corp. 8088-based personal computers and a few 80286-based PCs. The nodes were distributed over two floors, each divided into four quadrants. The PCs were daisy-chained by a thin Ethernet cable that ran from room to room in each quadrant. Each of the eight resulting daisy chains was, in turn, connected via a single-port repeater to a thick Ethernet backbone that ran from one quadrant to the next throughout the two floors. The network was used primarily by faculty and staff for managing research, as well as for writing, sending and receiving electronic mail.

At that time, our method for managing network expansion was rather primitive. In order to add a station, we had to crawl into the ceiling space and pull thin coaxial cable, install BNC connectors, make the connections and then hide the cables with molding. The seemingly constant addition and rearrangement of faculty and staff only heightened the unwieldiness of this procedure. Yet, despite its many flaws, we somehow managed to get by with this expansion method, adding new PCs to existing daisy chains and new chains to the backbone. We knew there had to be other, more efficient approaches, but in true catch-22 fashion, we were too busy moving and adding stations to investigate them.

Our network expansion method's shortcomings became all the more evident — and frightening — when we learned that a new wing would be added to the journalism building, doubling its size. The wing would house new and enlarged radio and television studios, freeing up the areas in which existing studios were located for additional classrooms and faculty offices. As a result, the network would be expanded to 400 nodes and support the daily operations of three student-run radio stations and two TV stations 24 hours a day, seven days a week.

To accommodate these new requirements, we needed a method for expanding and reconfiguring the network quickly while providing the reliability that the radio and TV stations would need — all at a cost lower than that of thin coaxial cable. We heard a lot of industry talk about 10Base-T and unshielded twisted pair, so we decided to investigate that approach. 10Base-T uses a hub-and-spoke architecture in which each room would have a direct, instead of shared, connection to the wiring closet. This design would move the single point of failure out of the walls and ceiling and into the wiring closet, where it could be readily addressed.

Another benefit of 10Base-T was that it would allow us to use telephone company technicians to install the wiring for both the voice and data networks. Since the hub-and-spoke design of our data network would be virtually identical to that of our voice network, we contracted with the technicians to install data-grade unshielded twisted pair, in addition to the voice-grade wiring for the phone network. The cost for the data installation was \$5 per room for labor; we provided the data-grade wire, face plates and termination blocks.

In the course of evaluating different kinds of data-grade wire and associated paraphernalia, we discovered a product called MultiConnect PairTamer from 3Com Corp. PairTamer is a network device that uses baluns to convert signals on a thin Ethernet coaxial cable for transmission over unshielded twisted pair. In addition, PairTamer has filters that suppress line noise caused by factors such as fluorescent lights and telephone ringer signals. It also provides spike protec-

*King is a senior systems analyst at the University of Florida's College of Journalism and Communications in Gainesville.*

tion, which prevents short circuits from occurring. Each PairTamer can serve as many as 25 networked machines.

As the name implies, PairTamer work in pairs. In our setup, the thin Ethernet cable to which the PCs in a classroom are connected would feed into one end of a PairTamer, which, in turn, would connect to the unshielded twisted-pair data circuit installed by the phone technicians. Another PairTamer would be installed at the end of that unshielded twisted-pair segment in the wiring closet, where it would connect to a thin Ethernet hub via coaxial cable. In this way, we could migrate our current PCs to the new wing's unshielded twisted-pair wiring without having to replace the thin Ethernet cards with 10Base-T cards, thus keeping costs down.

The use of 10Base-T, with its hub-and-spoke configurations, also influenced our wiring closet design. All wiring closets in the building are connected via multiple backbones: one for the TV and radio stations, one for the classrooms and labs, and another for faculty and staff, each of which is backed up. The multiple backbones are connected to one another with 3Com NetBuilder routers, which allow the Spanning Tree Algorithm to provide redundant paths between backbones. The routers also use selective packet filters to keep internetwork traffic to a minimum and separate network services that require a lot of bandwidth, such as remote booting.

To provide further peace of mind, we connected each wiring closet to an uninterruptible power supply. Then, after the wiring closet and backbone installations were completed, student assistants transferred our wiring scheme into a software-based network diagram, created in Micrografx, Inc.'s Micrografx Designer.

We've been living with the new wiring scheme for more than a year, and it has proven well worth the effort. The new wiring closet design makes moving and adding users a breeze.

For example, to move a faculty member, we simply search our name service — a database of users — to find the user's office number and the network to which that person is connected. Then, using any PC that can run Microsoft Corp.'s Windows, we call up our network diagram and locate the user's new office number and the wiring closet to which it connects. A technician moves the PC, connects the new office to the proper hub in the wiring closet and updates the user database. If the old office has a new user, the same process is repeated; if not, the empty office's connection to the hub in the wiring closet is removed for security.

If you're planning a network expansion, here are some wiring tips that we suggest that may make the job easier:

- Keep taps between the station and the hub to a minimum.
- Avoid using installed cabling in existing risers unless you're sure of its physical characteristics. Most risers use very small gauge wire, have unknown twist rates and have too many punchdown blocks in the data path.
- Strive for a star configuration than emanates from the wiring closet and allows you access — with unspliced runs — to all rooms in that area. But remember: 10Base-T specifications call for a maximum of 100 meters for this run. Also, connect the wiring closets serving each area with a backbone.
- Maintain the same kind of wire and jackets from one end of the Ethernet to the other.

Don't wait until your net is about to grow by mega-proportions before coming up with a solid method for handling expansion. If you do, you're inviting a gator attack that would make even our Gators run for cover.

**IT'S HARD TO DRAIN THE SWAMP** when those reptiles keep getting in the way. To share your "alligator story," call Susan Collins, associate features editor, at (508) 820-7413 or fax your idea to (508) 820-3467.

BY CLAUDE KING

## Carriers to buy into Syncordia

*continued from page 2*

Syncordia. The source added that France Telecom is hoping to team with DBP Telekom in purchasing a major stake in Syncordia in order to limit the degree to which the two carriers compete for global outsourcing deals.

Last fall, BT launched Syncordia, which provides end-to-end international private-line, facilities management and outsourcing services.

From the outset, BT has said it wanted to bring DBP Telekom and Japan's Nippon Telegraph and Telephone Corp. together as partners in the venture. However, BT has never indicated any intention to partner with France Telecom.

The French carrier would also bolster its presence in the international net market if it acquires Westinghouse Communications, which provides switched voice, virtual network, X.25 packet-switched and private-line services to its parent company and more than 100 user firms.

Westinghouse Communications also plans to roll out a public frame relay service ("Westinghouse to air global frame

relay service in '92," *NW*, Dec. 16, 1991).

But analysts cautioned that France Telecom is not close to completing a deal to acquire Westinghouse Communications, nor is the French carrier the only company bidding to buy Westinghouse Communications.

One analyst, who said he was briefed by a top Westinghouse official, said at least three other companies have engaged in serious negotiations to buy Westinghouse Communications. But the analyst, who requested anonymity, said Westinghouse and potential buyers could not agree on the value of the network unit.

The parties also disagreed on how much business Westinghouse should give the unit after the sale. The analyst said Westinghouse and the suitors ended negotiations in January.

But France Telecom officials said they are still in talks with Westinghouse about buying Westinghouse Communications. A Westinghouse spokesman declined to comment on those negotiations.

A sale could aid Westinghouse, which lost \$1.086 billion in 1991 on sales of \$12.8 billion primarily due to losses at its financial services unit. □

## Start-up intros OSI products

*continued from page 4*

president and CEO of LIR Corp. in San Jose, Calif.; Bjorn Ahlen, vice-president of marketing and sales and previously vice-president of international marketing and sales at Retix; Ian Milne, director of European sales and previously manager of U.K. sales and service at Fibronics International, Inc.; and Raomal Perera, general manager of ISOCOR in Ireland and previously a development director of Retix in Dublin.

The new company's first product line to be unveiled in mid-

March will include:

- ISOMAIL, a set of applications that allow users to compose, send and receive E-mail messages over the OSI transport stack that ISOCOR dubs the ISOPLEX engine. ISOMAIL fully conforms to the X.400 standard for local and remote user agents.
- ISOTRADE, software that supports EDI applications.
- ISOGATE, E-mail gateways that facilitate coexistence between OSI and de facto industry standards, such as the Transmission Control Protocol/Internet Protocol, Novell, Inc.'s Message Handling Service and IBM's Systems Network Architecture.
- ISOSEC, an International Standards Organization-compliant security feature that ensures authentication, confidentiality and integrity of user data. The security package is fully integrated with ISOCOR applications and the OSI transport suite.
- ISODIR, modules that provide access to both X.500 directory services and proprietary directory implementations for EDI and messaging applications.
- ISOMAN, which offers end-user network management and administration services for monitoring and controlling connectivity status, statistics, tracking and accounting reports. □

## Rules require outage reporting

*continued from page 6*

together to prevent reoccurrences. The group's first public meeting will be held Feb. 27.

Jeff Linder, counsel for TCA, expressed disappointment that the FCC chose to go ahead with a 50,000-line cutoff and little confidence that the NRC will be able to agree on more stringent requirements. "The thought of delegating this issue to a council dominated by carriers who have

already made clear that they want a higher threshold is outrageous," he said.

TCA is not a member of the NRC, but the International Communications Association (ICA), which is a member, expressed some reservations about shifting decisions on outage reporting rules to the council.

"We had hoped to have some top-down guidance from the commission [on outage questions] as opposed to punting major issues to the council," said Brian Moir, counsel for ICA.

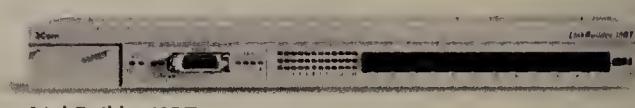
Several FCC commissioners expressed concerns that the agency's rules were too broad. "I'm a little concerned that 50,000 [lines] may be too high given the concerns of TCA," said Sherrie Marshall, one of the FCC's five commissioners.

Ervin Duggan, another commissioner who has pushed internally to get the FCC moving on network outage issues, agreed. "I have serious questions about whether the 50,000 [line cutoff] is an adequate threshold," he said. □



# Introducing a for the price of a

Once you only had two choices. Fixed-port hubs that didn't grow. Or expensive chassis-based hubs that did.



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Start with 12 ports in a single LinkBuilder 10BT and keep building. You can connect four of them in all—up to 48 ports—and have them act as a single, logical repeater. Just like a chassis-based hub—without the cost.

Best of all, perhaps, you can turn an unmanaged stack of LinkBuilder 10BTs into a managed stack with astonishing ease.

## Lotus details integration plan

*continued from page 4*

"We had an integration strategy in mind right from the time Lotus acquired cc:Mail, but now our plans are much firmer than they were back then," Sall said.

Separately, last week Lotus demonstrated alpha versions of two new cc:Mail offerings. The cc:Mail Macintosh Platform Pack 2.0 is a revised version of cc:Mail for Apple Computer, Inc. Macintosh users. It features support for

Apple's System 7 and an improved system for ferreting through a long list of messages for only those pertaining to specific subjects.

The Macintosh product is expected out in the second quarter.

Lotus also previewed cc:Mail Open Look Platform Pack, the first cc:Mail product designed for Unix users. The offering will enable users to send and receive Simple Mail Transfer Protocol messages without a gateway. Anticipated availability of this product was not disclosed. □

that any new technology provider moving onto the frequency would have to work around existing microwave users and provide protection from interference.

At the end of the transition period, microwave users who remain in the 1.8-GHz to 2.2-GHz band would be demoted to secondary-user status, meaning they would no longer have protection from interference from new primary users.

The FCC said it hopes current microwave users and firms eager to enter the bands in question will work out deals through which users would be compensated for moving to new frequencies. □

## FCC details spectrum plan

*continued from page 11*

cept public safety agencies from their current status as primary users in the 1.8-GHz to 2.2-GHz bands and set aside that spectrum for use by providers of new wireless technologies. The proposal limits microwave users from expanding their current networks. Microwave users will have a transition period before the bulk of these new rules take effect.

All current microwave users would be allowed to stay on existing frequencies for 10 to 15 years as coprimary users, which means

## LAN hub makers unveil modules

*continued from page 6*

al T-1 and T-1 facilities.

The AMS 8520 supports the Transmission Control Protocol/Internet Protocol and Xerox Corp.'s Xerox Network Systems, as well as the Routing Information Protocol and the Open Shortest Path First routing protocol.

The bridge/router also supports the IBM Source Routing bridging algorithm. Users can configure filter parameters based on destination and source address for better net efficiency.

The bridge/router can be equipped with an optional Flash

EPROM that enables the device to self-boot, eliminating the need for technicians to reboot remote devices.

The AMS 8520 costs \$9,495; a single-port version costs \$6,995. Both are due out next month.

David Systems announced the ExpressBus Token Ring Module, a 12-port card for its ExpressBus intelligent hub that supports 4M and 16M bit/sec token rings over standard twisted pair or unshielded twisted pair. An optional retiming daughterboard, available later this year, can be installed in the hub to increase the number of nodes on the token-ring LAN from 70 to more than 200.

The module can be linked to

any one of four token rings on the hub backplane, or it can be isolated from the hub's backplane yet still communicate with the hub's supervisor module for management capabilities.

The firm also announced a 12-port token-ring multistation access unit, the ExpressNet Token Ring Hub, that supports both 4M and 16M bit/sec LANs, as well as both shielded and unshielded twisted-pair wiring.

The ExpressBus Token Ring Module costs \$1,995 without the retiming board and \$2,795 with the feature. The MAU costs \$2,195.

Both products will be available next month. □

## Unisys boosts cooperative tool

*continued from page 6*

out the mid-range portion of the A Series. CCE support for the high-end A 16 and A 19 is planned for the third quarter.

Tom Willmott, a vice-president at Aberdeen Group, Inc., a Boston consultancy, said of the enhanced CCE, "It's very innovative cooperative processing software that helps a Unix or an OS/2 box link up with the capabilities

of the A Series operating system and do some peer-to-peer communications that are largely beyond the realm of possibility in any similar IBM [net]."

Unisys provides a suite of application program interfaces (API) that enable users to write programs that use A Series resources without having to understand the A Series' MCP/AS operating system, said Mark Feverston, program marketing manager for mainframe systems at Unisys.

APIs are offered for MCP/AS, Unix System V, Transmission Control Protocol/Internet Protocol stacks, Novell, Inc.'s NetWare, IBM's Network Basic I/O System, OS/2 and DOS, Feverston said.

The company will expand CCP hardware options toward the end of the year to include its U Series Unix workstations.

Prices for CCP and CCE hardware and software vary depending on configuration. An entry-level system compatible with the new A 11 costs \$24,000. □

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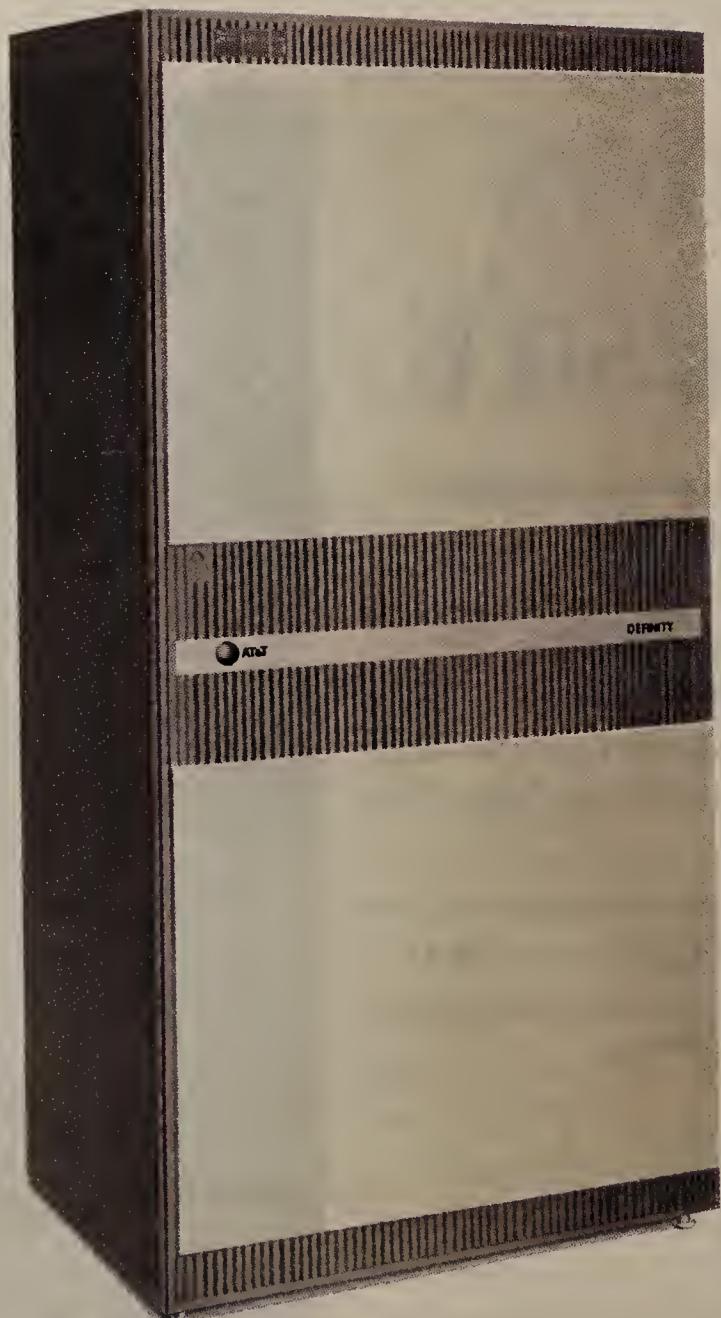
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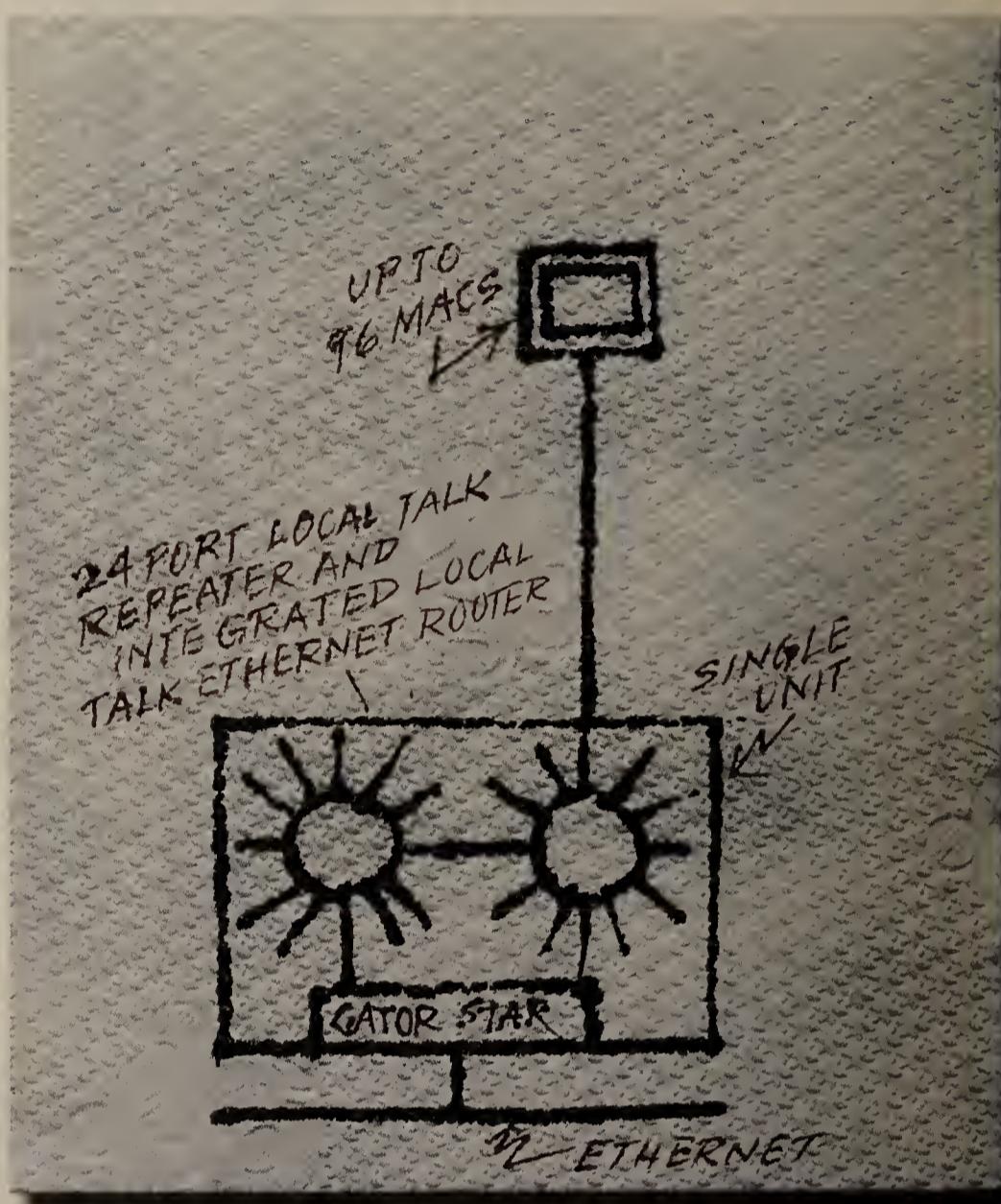
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GatorStar's 16.7 MHz 68302 processor and direct memory

#### The Case for GatorStar GX

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